HYT

SERVICE MANUAL

TWO-WAY RADIO

TC-320

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Introduction

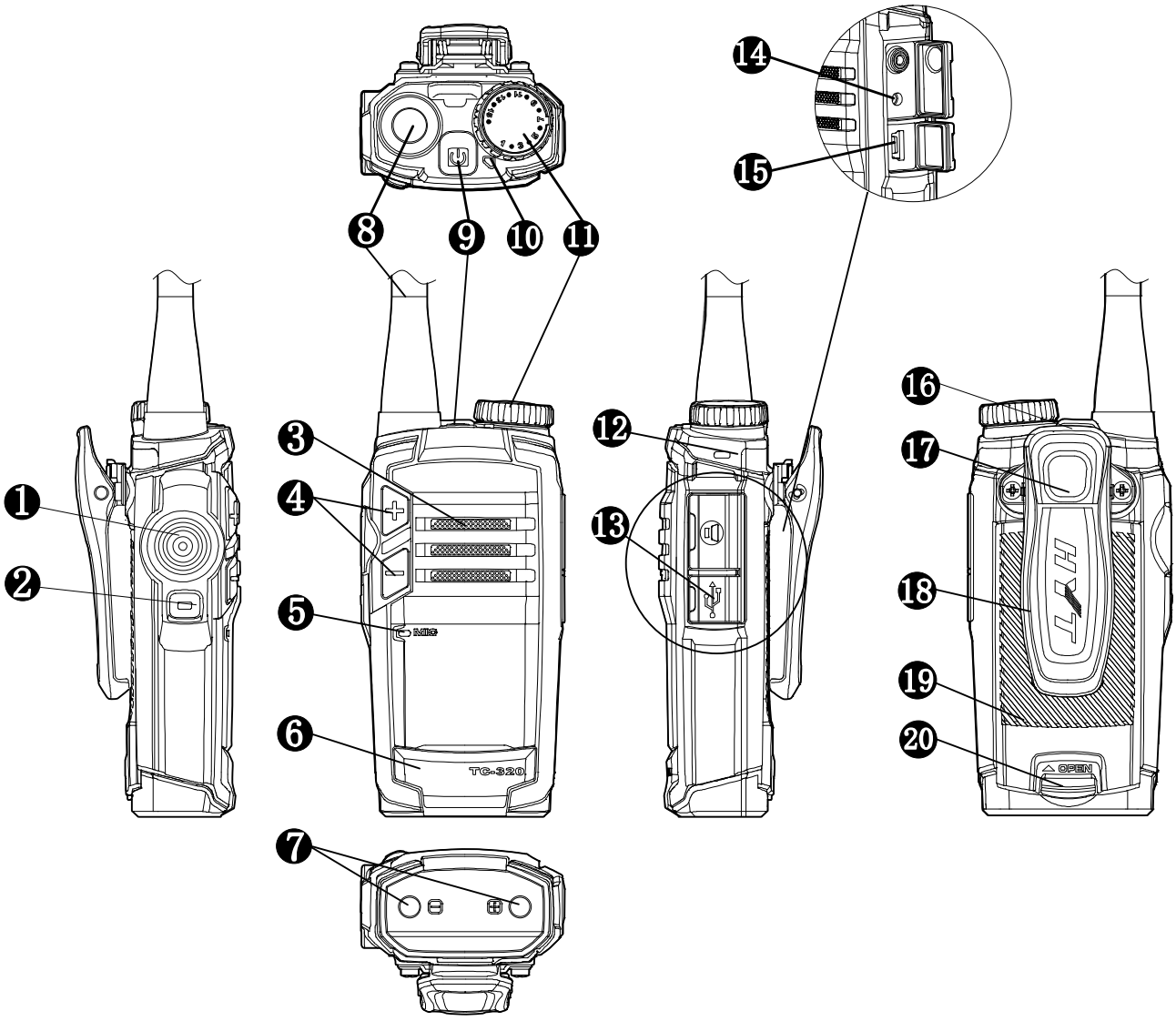
Manual Scope

This manual is intended for use by experienced technicians familiar with similar types of communication equipment. It contains all service information required for the equipment and is current as of the publication date.

Safety Information

- ◇ This radio shall be serviced by qualified technicians only.
- ◇ Only use HYT supplied or approved batteries and chargers.
- ◇ To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any area where posted notices instruct you to do so. Turn off your radio before boarding an aircraft. Any use of the radio must be in accordance with airline regulations or crew instructions.
- ◇ For vehicles with an air bag, do not place a radio in the area over an air bag or in the air bag deployment area.
- ◇ Turn off your radio prior to entering any area with explosive and flammable materials.
- ◇ Do not charge or replace your battery in a location with explosive and flammable materials.
- ◇ Turn off your radio before entering a blasting area.
- ◇ Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn may result.
- ◇ Do not expose the radio to direct sunlight for a long time, nor place it close to a heating source.
- ◇ When transmitting with a portable radio, hold the radio in a vertical position with the microphone 2.5 to 5.0 centimeters (one to two inches) away from your lips. Keep antenna at least 2.5 centimeters (one inch) away from your body when transmitting.
- ◇ If you wear a portable radio on your body, ensure that the antenna is at least 2.5 centimeters (one inch) away from your body when transmitting.

Radio Overview



(1) PTT (Push-to-Talk) Key	(2) SK (Programmable key)	(3) Speaker	(4)Volume Control Keys [+] / [-]
(5) Microphone	(6) Nameplate	(7) Charging Terminal	(8) Antenna
(9) Power On/Off Key	(10) Channel/Status Indicator	(11)Channel Selector Knob	(12) Charge Indicator
(13)Accessory Jack Cover	(14) Audio Accessory Jack	(15) Mini USB Jack	(16) Strap Hole
(17) Screw of Belt Clip	(18) Belt clip	(19) Rear Cover	(20) Battery Latch

⑤ **PTT (Push-to-Talk) Key**

Press and hold down the **PTT** key to transmit, and release it to receive.

⑤ **SK (Side Key)**

Side Key can be programmed with long/short press functions by your dealer.

Note: Short Press means key press no longer than 1 second, and Long Press means key press longer than 1 second.

Channel/Status Indicator

Status indications and alert tones are shown in the table below:

<table>
<tr><th colspan="2">Operations/Functions</th><th>LED Indications and Alert Tones</th></tr>
<tr><td rowspan="4">Wired Clone</td><td rowspan="2">To enter Wired Clone mode</td><td>Hold down both SK and Power On/Off Key, and then the source radio is turned on with red LED flashing once.</td></tr>
<tr><td>Turn on the target radio directly.</td></tr>
<tr><td>Status of the source radio (After target radio is turned on and cloning cable is connected, press PTT of source radio to begin cloning.)</td><td>Red LED glows during cloning process.
Error occurs during cloning:
a. User Clone: Once cloning begins, frequency band and Model ID will be checked. LED glows orange for 2 seconds and then goes out to indicate a failed check. If the check is successfully carried out but error occurs during cloning, LED will keep flashing orange until you press any key other than the Power On/Off Key to cancel it.
b. Factory Clone: If error occurs during cloning, LED will keep flashing orange until you press any key other than the Power On/Off Key to cancel it.
Once cloning is completed, green LED solidly glows.
Red LED will flash if battery runs low when the radio is in Clone Mode, while the radio will make no response if battery runs low during cloning process.</td></tr>
<tr><td>Status of the target radio</td><td>LED solidly glows green when cloning is in progress.
Green LED goes out when cloning is completed.</td></tr>
<tr><td colspan="2">Power On (to enter User Mode)</td><td>When the radio is turned on, an alert tone sounds and orange LED flashes once.
When the radio is currently on a blank channel, it sounds beep tone continuously.</td></tr>
<tr><td colspan="2">Power Off</td><td>When the radio is turned off, the power off alert tone is heard.</td></tr>
<tr><td colspan="2">Low Battery Alert</td><td>LED flashes red, and a low-pitched tone sounds at intervals of 10 seconds.</td></tr>
<tr><td colspan="2">Transmitting</td><td>Red LED solidly glows.
When TOT timer expires, the radio sounds beep tone continuously.
A TOT pre-alert tone sounds before TOT timer expires.</td></tr>
<tr><td colspan="2">Receiving</td><td>LED glows green when carrier is present.</td></tr>
<tr><td colspan="2">Scan</td><td>Green LED flashes once every 1 second, while scanning is in process.
Scan Start Alert (programmable by the dealer): a beep is heard.
Scan End Alert (programmable by the dealer): a beep is heard.</td></tr>
<tr><td colspan="2">Writing/Reading Data</td><td>Red LED glows when reading data.</td></tr>
</table>

	Green LED glows when writing data.
Adjust Power Level	A low-pitched tone is heard when the radio is switched to low power. A high-pitched tone is heard when the radio is switched to high power.
VOX	One beep is heard when the VOX feature is activated. Two beeps are heard when the VOX feature is disabled.

⑤ **Channel Selector Knob**

Rotate the knob to select your desired channel.

⑤ **Power On/Off Key**

Long press the **Power On/Off Key** until an alert tone is heard to turn the radio on/off.

⑤ **Volume Control Keys [+] / [-]**

⑤ **Battery Latch**

Used to secure or remove the battery.

⑤ **Audio Accessory Jack**

Used to connect audio accessories such as earpiece and microphone.

⑤ **Mini USB Jack**

To connect accessories such as programming cable, cloning cable and switching power.

Software Specifications

Description of Features

1. Channel Capacity: 16
2. Channel Spacing: 25KHz/12.5KHz
3. Channel Scan
4. Rx/Tx status indication (red/green LED)
5. CTCSS/CDCSS Encode&Decode (38 groups of CTCSS, 83 groups of CDCSS, and CTCSS Tail Revert of 180 degrees.)
6. Low Battery Alert
7. Battery Save
8. Unlock Detection and Emergency Alarm
9. Two Selectable Squelch Levels
10. Monitor
11. Time-out Timer (TOT)
12. Squelch Tail Elimination
13. PC Programming (manual/ automatic adjustment)
14. High/Low Power Switch (2.0/0.5W)
15. Wide & Narrow Bandwidth Compatible
16. Busy Channel Lockout (transmission prohibited in busy status)
17. Wired Clone
18. Battery Strength Indicator
19. Manual Adjustment
20. VOX and Three Selectable Sensitivity Levels

Description of Modes

User Mode

It is a conventional communication mode. After the radio is turned on, it enters the User Mode.

PC Programming Mode

The radio will enter PC Programming Mode through communication with PC programming software. In this mode, radio functions and adjustment parameters can be set through programming software (including User Version and Factory Version).

The operation procedures are as follows:

1) Install PC programming software and its driver dedicated for TC-320 before your initial use.
2) Connect the USB port of PC with the Mini USB jack of the radio using a programming cable.
3) Turn on the radio.
4) Launch the programming software to perform reading or writing operation.

Note:

1) When reading/writing data is in progress, red/green LED glows; when reading/writing data is completed, LED goes out.
2) During the operation, if any abnormal situation occurs or no reply is given within a period, the reading/writing operation will fail and an error message window will pop up.

Wired Clone Mode

1. Description

Wired Clone Mode is an independent mode. To access other modes, you must restart the radio.

Wired Clone Mode covers User Clone mode and Factory Clone mode.

1) User Clone Mode:

   Connect two radios using a clone cable. Hold down both **SK** and **Power On/Off Key** of the source radio, it will be turned on and will enter User Clone Mode after 2 seconds. The target radio can be directly turned on to enter the mode. In this mode, parameter data stored in EEPROM of the source radio will be cloned to EEPROM of the target radio. The data transferred only covers channel data and common parameters, excluding adjustment data, version and serial No. of the model.

2) Factory Clone Mode:

   Connect two radios using a clone cable. Hold down both **SK** and **Power On/Off Key** of the source radio, it will be turned on and will enter User Clone Mode by default after 2 seconds. Press SK afterwards to switch to Factory Clone Mode. The target radio can be directly turned on to enter the mode. The data transferred covers all data in EEPROM other than serial No, with flag of manual adjustment switch included.

2. Process

Process of Wired Clone:

1) Red LED flashes once after the source radio enters Wired Clone Mode. Press **PTT** to clone data to the target radio.
2) During communication, the source radio glows red LED, and the target radio glows green LED. When communication ends, the source radio glows green LED and LED of the target radio goes out, which indicates both radios are ready for another cloning.
3) If any abnormal situation occurs during communication, the source radio will flash orange LED and will stop communication for another cloning.
4) When the communication ends, the source radio goes back to standby status. Press **PTT** again to begin another cloning.

Manual Adjust Mode

Hold down **PTT, SK** and **Power On/Off Key** to turn the radio on and to enter Manual Adjust Mode. (Note: This operation is subject to the option Panel Test Mode in the programming software. When this option is unchecked, the radio will be unable to enter the adjustment mode. It helps avoid change of parameters and degradation of radio performance caused

by user's misoperations.)

Keep this option unchecked after values are well adjusted from factory, to avoid any unexpected change of values. The adjustment values can be reset and changed in Factory Mode only.

Description of adjustment:

1) To enter Manual Adjust Mode

Hold down **PTT, SK** and **Power On/Off Key** until the radio is turned on and orange LED glows, the radio will enter Adjust Mode. When the keys are released, the radio will enter item N of Tx group (N depends on the position where the **Channel Selector Knob** locates). Red LED glows for adjustment of Tx group items and green LED glows for adjustment of Rx group items.

2) To switch between Tx group and Rx group

This operation is done through the Channel Selector Knob.

Red LED solidly glows when adjusting items in Tx group.

Green LED solidly glows when adjusting items in Rx group.

3) To switch between items of Tx group/Rx group

This operation is done through the Channel Selector Knob.

Tx group: CH1 to CH9 stand for Tx Low Power, Tx High Power, CDCSS Balance, CDCSS Deviation, CTCSS Deviation (low), CTCSS Deviation (medium), CTCSS Deviation (high), Tx Low Voltage Threshold and Max. Deviation of Tx Audio respectively.

Red LED solidly glows when adjusting items CH1 to CH9.

Rx group: CH10 to CH12 stand for SQL On 5, SQL Off 5, and Rx Low Voltage Threshold respectively.

Green LED solidly glows when adjusting items CH10 to CH12.

CH13 to CH16 are invalid and carry no adjustment item.

4) To switch between wide and narrow bandwidth

When adjusting a certain item, short press **SK** (orange LED flashes indicating valid press) to switch between wide/narrow bandwidth. After this operation, the first frequency of current bandwidth is the frequency for adjustment by default.

5) To switch frequency

Short press (no longer than 1 second) **PTT** (green LED flashes indicating valid press) to switch frequency one by one, under certain bandwidth and certain adjustment item.

6) To add/subtract adjustment value

Short press **[+]** under certain bandwidth and certain tuning item, and the adjustment value will increase in steps of 1; hold down **[+]**, and the adjustment value will keep increasing in steps of 1. The adjustment value will remain unchanged once it reaches the allowed maximum value.

Short press **[-]** under certain bandwidth and certain tuning item, and the adjustment value will decrease in steps of 1; hold down **[-]**, and the adjustment value will keep decreasing in steps of 1. The adjustment value will remain unchanged once it reaches the allowed minimum value.

7) Measures on special items:

Tx group: CH8 is the Tx Low Voltage Threshold. This adjustment item is related to AD sampling. Press **[+]** or **[-]** after entering the above item, to activate AD sampling (including calculation) once. Rotate the Channel Selector Knob to save the current AD sampling value. If **[+]** and **[-]** are not pressed, neither the adjustment value will be updated, nor will AD sampling be activated.

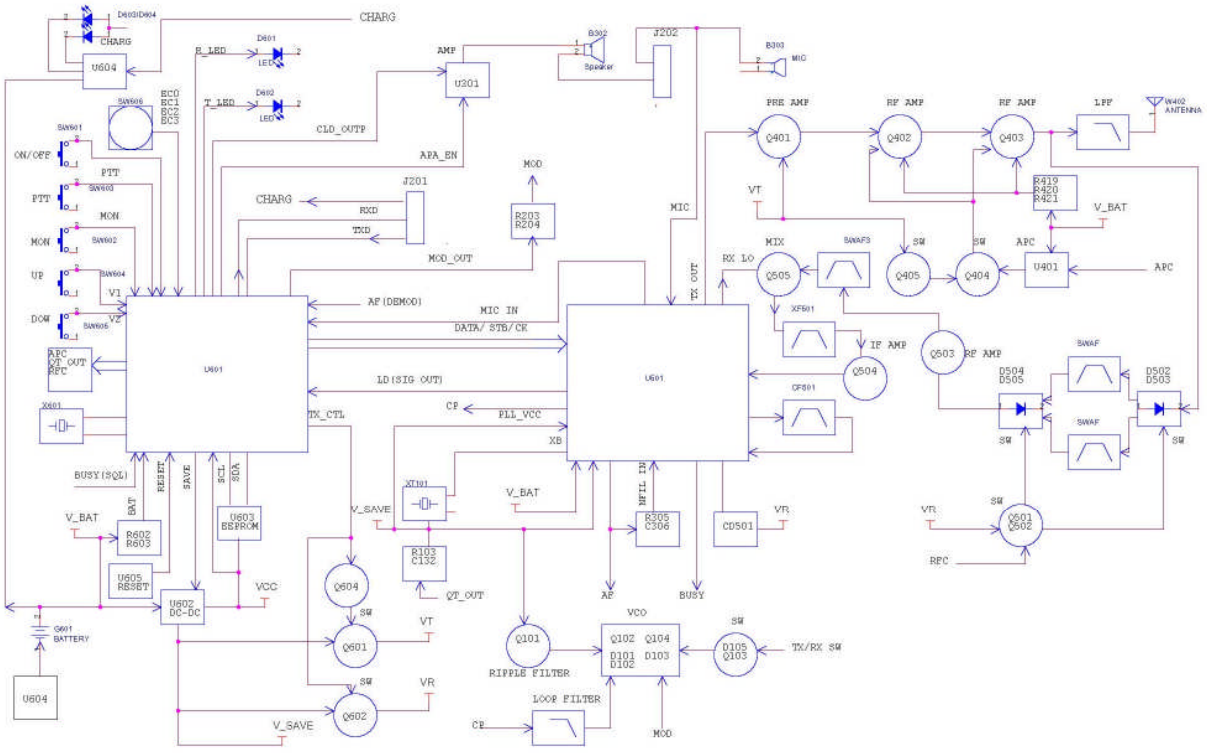
Rx group: CH10 to CH12 stand for SQL On 5, SQL Off 5, and Rx Low Voltage Threshold respectively. These adjustment items are related to AD sampling. Press **[+]** or **[-]** after entering the above items, to activate AD sampling (including calculation) once. Rotate the Channel Selector Knob to save the current AD sampling value. If **[+]** and **[-]** are not pressed, neither the adjustment value will be updated, nor will AD sampling be activated.

8) Description of key press:

Short press: key press no longer than 1 second; Long press: key press time longer than 1 second.

Circuit Description

1. General Diagram



Tx Section: Audio signal from MIC is sent to the RF chip (U501) directly. In U501, the signal is amplitude limited and amplified, and then sent to the MCU chip (U601). The baseband signal processing circuit in U601 will convert the amplified audio signal to digital signal via A/D conversion, and then convert the digital signal to modulation signal via D/A conversion after processing such as filtering, signal compression, encryption, pre-emphasis, Tx gain control and amplitude limiting are completed. The modulation signal from MCU will pass through the low-pass filter circuit and then will go to VCO for direct frequency modulation. The modulated carrier signal is converted to RF signal by the buffer amplifier (U501), and then enters front-stage power amplifier (Q401) for amplification. The amplified RF signal will be further amplified by the pre-driver (Q402) and final-stage power amplifier (Q403), and then will enter low-pass filter circuit through the switching diode (D401), and will be finally transmitted via antenna after ultroharmonics are removed. D402 and D501 compose the Rx-Tx switch circuit.

Rx section: Desired and undesired RF signals received via the antenna are fed to the bandpass filter (composed of SAWF501 and SAWF502) to filter out undesired out-of-band interference signal, and then amplified by the RF amplifier (Q506). The amplified signal is then fed to the bandpass filter (SAWF503) to filter out undesired out-of-band interference signal. The desired RF signal is mixed with the first local oscillator signal (output from VCO) by Q505. The newly generated signal is processed by the crystal filter (XF501) to get the first IF signal (desired signal). After being amplified by Q504, this IF signal enters the RF chip (U501), and is mixed with the second local oscillator signal to generate the second IF signal. The second IF signal is demodulated by U501 to output audio signal, which is sent to MCU for A/D conversion and filtering. Afterwards, the audio signal is divided into two flows. One flow is processed by CTCSS/CDCSS decoder; the other is restored to audio signal through filtering, de-emphasis, decoding, signal expansion and D/A conversion. Then the restored audio signal is amplified by the audio power amplifier (U301) to drive the speaker directly.

Power Supply Section: The 3.7V battery voltage is converted to two flows of 3.0V DC voltage by the LDO module (U602). One flow supplies 3.0V VCC for the CPU; the other outputs 3.0V V-SAVE voltage, which goes through Q604 and Q601 respectively to supply, under the control TX-CTRL, 3.0V VT for Tx circuit. The V-SAVE voltage also goes through Q602 to supply 3.0V VR for Rx circuit.

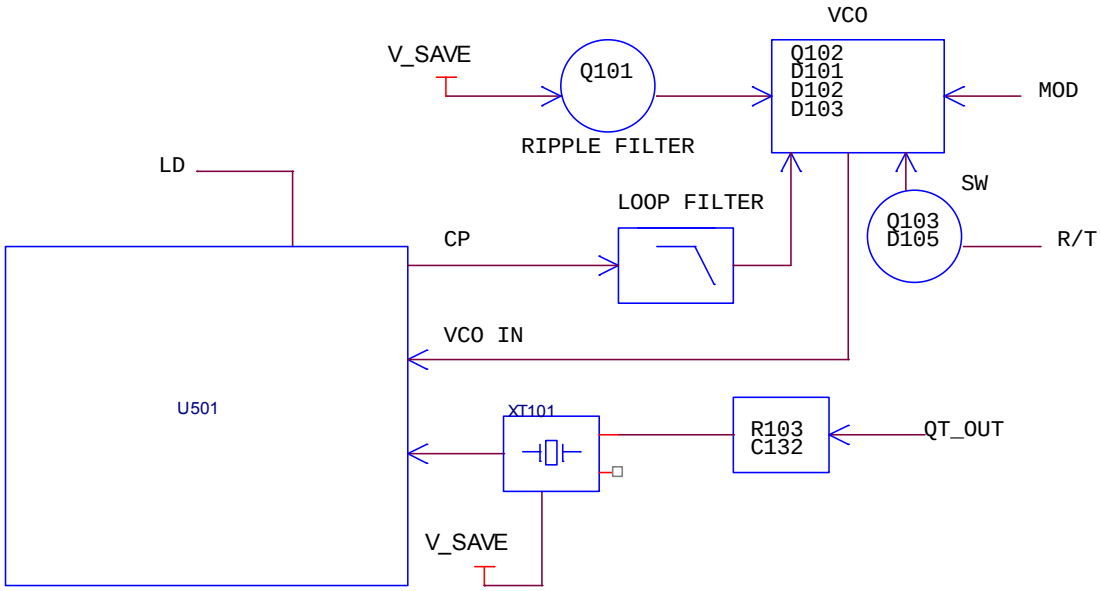
Signaling Encode: Signaling encode signal output from the port MCU QT_OUT is divided into two flows. One flow goes through RC network to modulate the PLL reference frequency oscillator; the other goes through QT-MOD to modulate the VCO.

Battery Charge Section: U604 supplies power to charge battery. Charge indicator glows orange while battery is charging, and glows green after battery is fully charged. Charge indicator also glows green when there's no battery.

2. Realization Methods of Basic Functional Modules

2.1 HF Section

2.1.1 Block Diagram of PLL Circuit



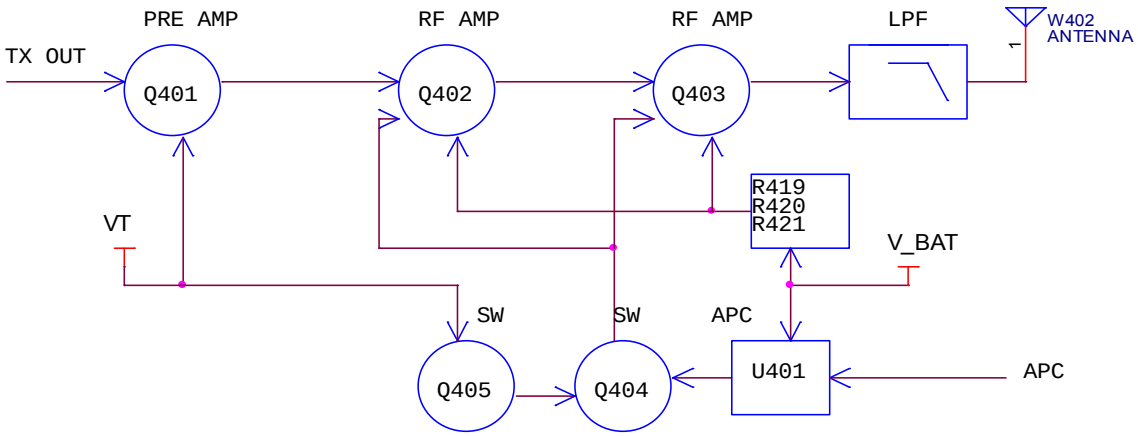
PLL circuit generates RF carrier signal for Tx and the first local oscillator signal for Rx.

Step frequency of the PLL circuit is 6.25 KHz, 10.0 KHz or 12.5 KHz. In U501, the 21.25MHz reference oscillator signal is divided into 6.25 KHz, 10.0 KHz or 12.5 KHz reference frequencies via a fixed counter in PLL. The signal output from the VCO (Tx/RxVCO) enters PLL and is processed by the buffer amplifier. The amplified signal is further processed in PLL by the variable frequency-divider. Then the signal is compared with the reference frequency in the phase detector (PD) of PLL. Signal generated from PD passes through a low-pass filter, and then is sent to the varactors (D101 and D102) of VCO so as to control output frequency. The signal buffer amplified by PLL also serves as the first local oscillator signal for both Tx and Rx.

The Q103 switch controls connection status of D105 so as to switch between Rx VCO and Tx VCO. When R/T is at high level, Tx VCO is valid; when R/T is at low level, Rx VCO is valid.

In case pin LD of U501 is at low level, unlock status is valid. When this status is detected by the microprocessor, transmit/receive operations are prohibited.

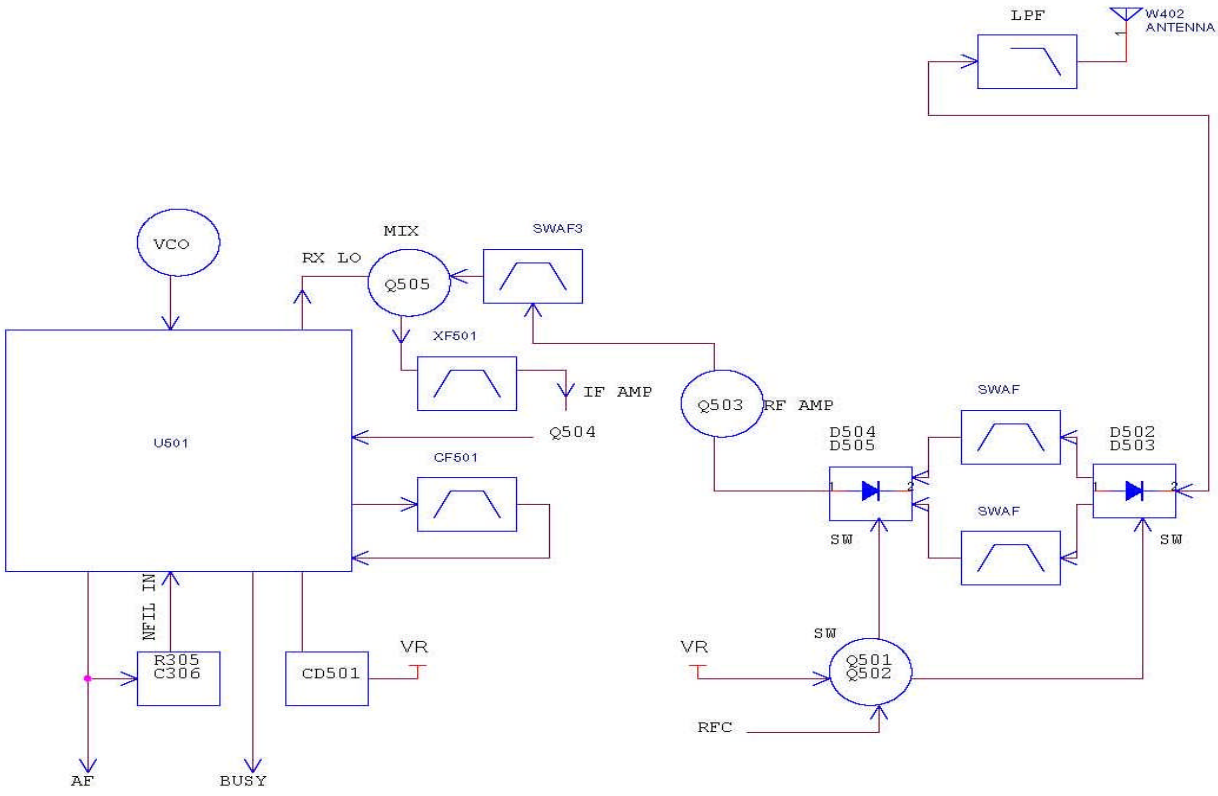
2.1.2 Block Diagram of RF Power Amplifier



The modulated carrier signal output from VCO is pre-amplified by U501, and then goes to the front-stage amplifier Q401, driver-stage amplifier Q402 and final-stage amplifier Q403 respectively. Afterwards, the amplified RF signal enters the low-pass filter (LPF) circuit through diode D401, and then is transmitted via the antenna after ultroharmonics are removed. D402 and D501 compose the Rx-Tx switch circuit.

APC circuit is composed of Q404, Q405 and U401. U401 controls the bias voltage at the gates of Q402 and Q403, to control Tx current and to further regulate power.

2.1.3 Block Diagram of Rx Circuit



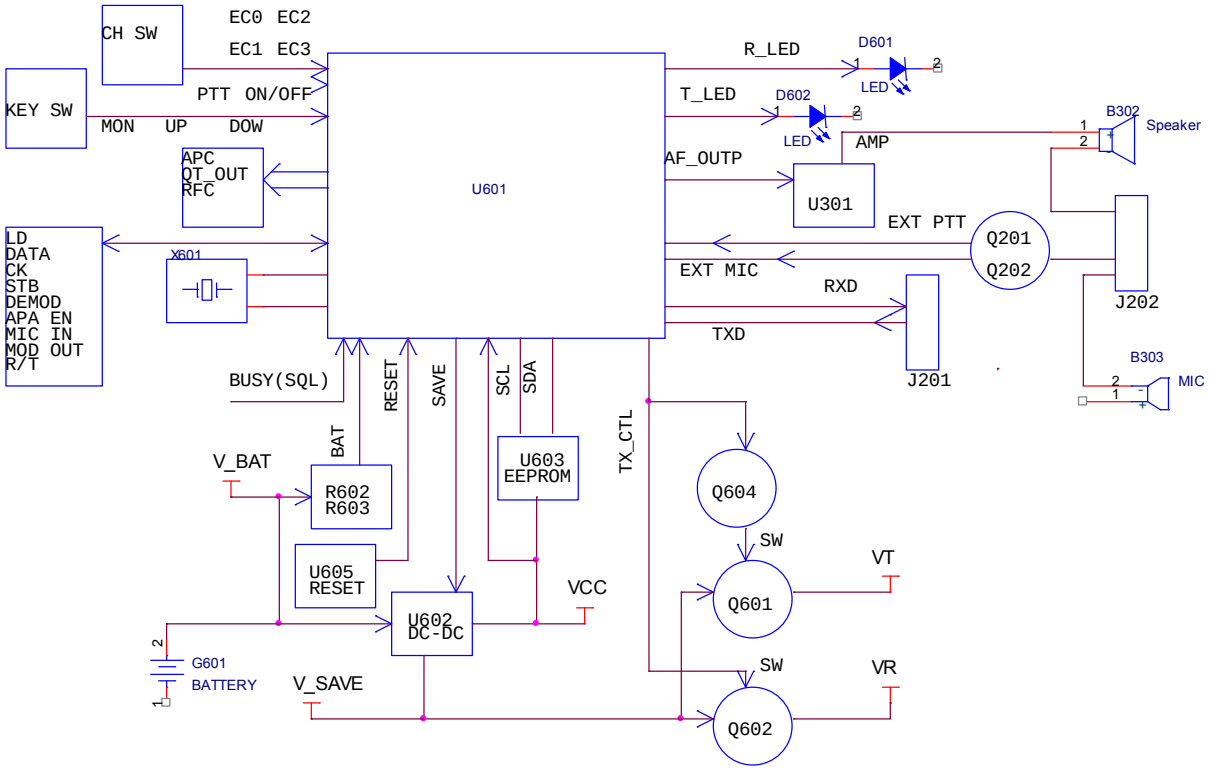
Desired and undesired RF signals received via the antenna are fed to the SAW filter to filter out undesired out-of-band interference signal. Then the desired RF signal is amplified by Q506 and enters U501, where it is amplified by the high-frequency low-noise amplifier. Afterwards, the amplified signal goes through the bandpass filter again to filter out undesired out-of-band interference signal. Desired RF signal is mixed with the first local oscillator signal (output from VCO) by Q505, to output the first IF signal (21.7MHz), which is processed by the IF filter and IF amplifier Q504. Afterwards, it is sent to the IF processing circuit of U501.

In U501, this first IF signal is mixed with the second local oscillator signal to generate the second IF signal. Then the

second IF signal is demodulated by U501 to output audio signal, which is sent to MCU for A/D conversion and filtering. Afterwards, the audio signal is divided into two flows. One flow is processed by CTCSS/CDCSS decoder; the other is restored to audio signal through filtering, de-emphasis, decoding, signal expansion and D/A conversion. Then the restored audio signal is amplified by the audio power amplifier IC (U301) to drive the speaker directly.

2.2 MCU Control, Signal Processing and Audio Power Amplification

Circuit diagram of this section is shown as below:



2.2.1 MCU Control Circuit

MCU control circuit is composed of MCU, EEPROM, LCD (exclusive for TC-320), keys, etc. This section has the following functions: to initialize data of the radio and save data to EEPROM; to drive LCD to display some user set information and status; to detect battery voltage and signals from external keys, LD and VOX-DET, and to make response; to transmit required data to PLL based on the channel encoding status; to switch and control Rx/Tx based on the input PTT signal; to switch the squelch circuit on/off based on the input signaling decode signal and squelch level signal; to control circuits of high/low power switch, audio power amplifier, VCO power supply, Rx power supply and Tx power supply; (for programming) to communicate with PC via RXD/TXD based on the RS232 protocol, and transmit/receive data to/from PC.

2.2.2 Signal Processing Section

2.2.2.1 Tx Baseband Processing

The audio signal input from MIC enters U601, and is then converted into digital signal by analog-to-digital conversion. Afterwards, the signal is divided by the digital low-pass filter into 2 flows. One flow serves as the signal of VOX detection; the other is processed by AGC, compandor, high-pass filter, encryption and pre-emphasis, mixed with DTMF signal from MCU, converted to baseband signal via digital-to-analog conversion to output. Then the signal is processed by the active low-pass filter, and sent to the VCO for modulation.

2.2.2.2 Rx Baseband Processing

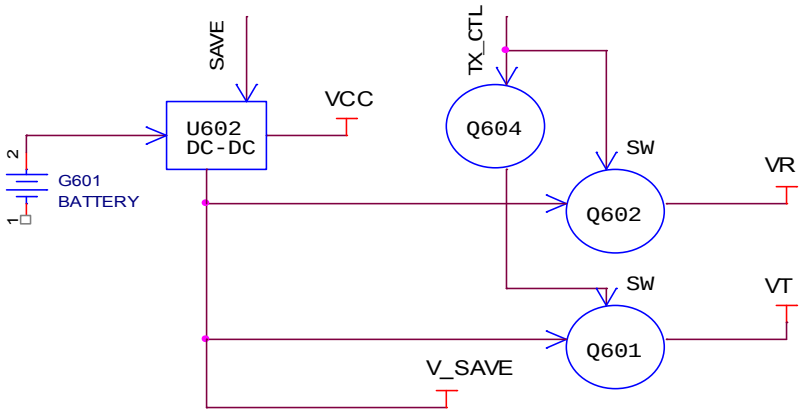
After entering U601, the DEMOD signal derived from IF demodulation is converted to digital signal via analog-to-digital conversion (ADC), and then is sent to the digital low-pass filter. The signal is divided into 2 flows. One flow is processed by CTCSS/CDCSS decoder; the other is processed by high-pass filter, and then is subject to de-emphasis, decryption, signal expansion and DTMF demodulation and etc, and finally digital-to-analog conversion to output audio signal.

2.2.3 Audio Power Amplifier

The audio signal output from U601 is amplified by the audio power amplifier (U301) to drive the speaker directly.

2.3 Power Supply Processing

Block diagram of power supply circuit is shown as below:



Power Supply Section: The 3.7V battery voltage is converted to two flows of 3.0V DC voltage by U602. One flow supplies 3.0V VCC for the CPU; the other outputs 3.0V V-SAVE, which goes through Q601, Q602 and Q604 respectively to supply, under the control TX-CTRL, VT for Tx circuit and VR for Rx circuit. U602 also supplies the PLL circuit with voltage V-SAVE.

CPU Pins

Pin No.	Port	Pin Name	I/O	Function
1	None	/	/	/
2	None	/	/	/
3	None	/	/	/
4	None	/	/	/
5	None	/	/	/
6	TXD	TXD	O	UART TxD
7	RXD	RXD	I	UART RxD
8	P60	APA_EN	O	Control speaker; H: unmute, L: mute
9	P61	SAVE_CTL	O	Control Power Save; in non-Power-Save status, it is at high level.
10	P62	EXT MIC	I	Check MIC connection (valid for high level)
11	P63	EXT PTT	I	PTT key on the earpiece (valid for high level)
12	P64	Red LED	O	Red LED
13	P65	Green LED	O	Greed LED
14	P66	Reserve	O	Reserved
15	P67	Reserve	O	Reserved
16	Vssd	GND	S	Ground power supply for digital circuit

17	Vddd	VCC(3.0V)	S	Power supply for digital circuit
18	P50/INT0	VOL+	I	To increase the volume
19	P51/INT1	VOL-	I	To decrease the volume
20	P52/INT2	Reserve	O	Reserved
21	P53/INT3	/POWER ON/OFF	I	Radio On/Off
22	P54/INT4	SK	I	Programmable function key (side key) (valid for low level), external pull-up resistor connected
23	P55/INT5	PTT	I	PTT key (valid for low level), external pull-up resistor connected
24	P56/INT6	Reserve	O	Reserved
25	P57/INT7	Reserve	O	Reserved
26	Vdd_CLD	VCC(3.0V)	S	Power supply for digital PA
27	CLD_OUTP	CLD_OUTP	O	LINEOUT output; positive output of digital PA
28	VSS_CLD	GND	S	Ground power supply for digital PA
29	CLD_OUTM	Reserve	O	Negative output of digital PA
30	Vdd_CLD	VCC(3.0V)	S	Power supply for digital PA
31	P77	RF_CTRL	O	Control Rx frequency band; high level (high frequency band); low level (low frequency band)
32	P76/DAC1	APC	DA	Control transmit power
33	P75/VREF	VCC(3.0V)	I	Input of reference voltage of ADC and DAC
				Pin
34	P74/DAC0	QT_OUT	DA	CTCSS/CDCSS output
35	P73/AD3	Reserve	AD	Reserved
36	Vssa	GND	S	Ground power supply for analog circuit
37	Vdda	VCC(3.0V)	S	Ground power supply for analog circuit
38	P72/AD2	Reserve	AD	Reserved
39	P71/AD1	SQL	AD	Detect noise
40	P70/AD0	BAT_DET	AD	Detect battery strength
41	XTAL0	OSC0		For 32.678KHz main crystal oscillator
42	XTAL1	OSC1		
43	PLL_CAP	PLL_CAP		For PLL external capacitor (10nF)
44	None	/	/	/
45	None	/	/	/
46	None	/	/	/

47	None	/	/	/
48	None	/	/	/
49	P03/COM3	Reserve	O	Reserved
50	P02/COM2	Reserve	O	Reserved
51	P01/COM1	Reserve	O	Reserved
52	P00/COM0	Reserve	O	Reserved
53	P10/SEG0	Reserve	O	Reserved
54	P11/SEG1	Reserve	O	Reserved
55	P12/SEG2	Reserve	O	Reserved
56	P13/SEG3	Reserve	O	Reserved
57	P14/SEG4	Reserve	O	Reserved
58	P15/SEG5	Reserve	O	Reserved
59	P16/SEG6	Reserve	O	Reserved
60	P17/SEG7	Reserve	O	Reserved
61	P20/SEG8	EN0	I	To detect input from encoder switch
62	P21/SEG9	EN1	I	
63	P22/SEG10	EN2	I	
64	P23/SEG11	EN3	I	
65	P24/SEG12	Reserve	O	Reserved
66	P25SEG13	Reserve	O	Reserved
67	P26/SEG14	Reserve	O	Reserved
68	P27/SEG15	Reserve	O	Reserved
69	P30/SEG16	Reserve	O	Reserved
70	P31/SEG17	Reserve	O	Reserved
71	None	/	/	/
72	None	/	/	/
73	None	/	/	/
74	None	/	/	/
75	None	/	/	/
76	P32/SEG18	Reserve	O	Reserved
77	P33/SEG19	Reserve	O	Reserved
78	P34/SEG20	Reserve	O	Reserved
79	P35/SEG21	Reserve	O	Reserved

80	P36/SEG22	Reserve	O	Reserved
81	P37/SEG23	Reserve	O	Reserved
82	P40/SEG24	Reserve	O	Reserved
83	P41/SEG25	SCL	O	EEPROM CLOCK, external pull-up resistor connected
84	P42/SEG26	SDA	O	EEPROM DATA, external pull-up resistor connected
85	P43/SEG27	LD	I	To detect PLL circuit unlock (H: lock; L: unlock), external pull-up resistor connected
86	P44/SEG28	DATA	O	PLL DATA
87	P45/SEG29	CK	O	PLL CLOCK
88	P46/SEG30	STB	O	PLL ENABLE
89	Vssd	GND	S	Ground power supply for digital circuit
90	Vddd	VCC(3.0V)	S	Power supply for digital circuit
91	SW_P0	R/T	O	Rx/Tx control, H: Rx; L: Tx (switch to VCO)
92	SW_P1	TX_CTRL	O	Control power supply for Tx (transmit at high level)
93	RESET	RESET	I	Reset input
94	Vssa	GND	S	Ground power supply for analog circuit
95	Vdda	VCC(3.0V)	S	Power supply for analog circuit
96	BG_REF		O	To output reference voltage
97	MIC_IN	MIC_IN	I	Microphone input
98	DEMODE	DEMODE	I	To input baseband signal (audio and CTCSS/CDCSS)
99	MODOUT	MODOUT	O	To output baseband signal (audio and CTCSS/CDCSS)
100	None	/	/	/

TC-320 Parts List 1

TC-320U(1) VG Parts List 1 (400-420MHz）					
No.	Part No.	Description	Qty.	Ref No.	Print No.
1	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R222	T3G
2	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R518	B3H
3	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	L510	B2H
4	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R223	T3G
5	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R314	T3B
6	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R527	B2H
7	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R101	B4H
8	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R119	B3F
9	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R311	T3A
10	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R516	B3I
11	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R530	B2G
12	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R604	T2E
13	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R614	T4E
14	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R621	T4E
15	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R623	T4E
16	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R114	B3E
17	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R207	T2G
18	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R214	T3D
19	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R613	T2G
20	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R109	B4E
21	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R309	T4D
22	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R107	B4E
23	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R116	B3E
24	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R120	B3F
25	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R210	T5E
26	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R219	T2D
27	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R301	T3A
28	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R409	T2B
29	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R428	T2B
30	3001051040000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R213	T3D
31	3001051040000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R113	B3E
32	3001051050000	Chip resistor 0402 1MΩ F 1/16W (RoHS)	1	R218	T2D
33	3001051050000	Chip resistor 0402 1MΩ F 1/16W (RoHS)	1	R405	T2B
34	3001051220000	Chip resistor 0402 1.2KΩ J 1/16W(RoHS)	1	R220	T4E
35	3001051230000	Chip resistor 0402 12KΩ J 1/16W(RoHS)	1	R224	T3G
36	3001051230000	Chip resistor 0402 12KΩ J 1/16W(RoHS)	1	R528	B2G
37	3001051530000	Chip resistor 0402 15KΩ J 1/16W (RoHS)	1	R406	T2A
38	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R422	T3A
39	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R423	T3B
40	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R424	T3B
41	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R425	T3B
42	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R426	T3A
43	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R427	T2A
44	3001052200000	Chip resistor 0402 22Ω J 1/16W (RoHS)	1	R429	B2F
45	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R202	T2D
46	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R216	T3D
47	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R306	B3H
48	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R407	T2B
49	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R507	B3H
50	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R615	T3H

51	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R110	B4E
52	3001052230010	Chip resistor 0402 22KΩ J 1/16W (RoHS)	1	R215	T3D
53	3001052230010	Chip resistor 0402 22KΩ J 1/16W (RoHS)	1	R312	B4H
54	3001052240010	Chip resistor 0402 220KΩ F 1/16W (RoHS)	1	R602	T2E
55	3001052240010	Chip resistor 0402 220KΩ F 1/16W (RoHS)	1	R603	T2E
56	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R115	B3E
57	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R505	B2I
58	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R506	B3H
59	3001052720010	Chip resistor 0402 2.7KΩ F 1/16W(RoHS)	1	R502	T3H
60	3001052730010	Chip resistor 0402 27KΩ F 1/16W (RoHS)	1	R408	T2A
61	3001052740000	Chip resistor 0402 270KΩ J 1/16W (RoHS)	1	R303	B3H
62	3001053310010	Chip resistor 0402 330Ω J 1/16W (RoHS)	1	R404	B2E
63	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R203	T4E
64	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R204	T4E
65	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R305	B4H
66	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R307	B4H
67	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R401	B2F
68	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W (RoHS)	1	R402	B2E
69	3001053330000	Chip resistor 0402 33KΩ F 1/16W(RoHS)	1	R125	B4H
70	3001053920010	Chip resistor 0402 3.9KΩ J 1/16W(RoHS)	1	R606	T4D
71	3001053920010	Chip resistor 0402 3.9KΩ J 1/16W(RoHS)	1	R633	T3G
72	3001053930000	Chip resistor 0402 39KΩ J 1/16W(RoHS)	1	R302	T3A
73	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R308	T3A
74	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R310	T3A
75	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R403	B2E
76	3001054700000	Chip resistor 0402 47Ω J 1/16W(RoHS)	1	R111	B4E
77	3001054700000	Chip resistor 0402 47Ω J 1/16W(RoHS)	1	R123	B3F
78	3001054700000	Chip resistor 0402 47Ω J 1/16W(RoHS)	1	R618	T4G
79	3001054700000	Chip resistor 0402 47Ω J 1/16W(RoHS)	1	R619	T3G
80	3001054710000	Chip resistor 0402 470Ω J 1/16W(RoHS)	1	R201	T2D
81	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R112	B3E
82	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R206	T3G
83	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R511	B2H
84	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R512	B1E
85	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R608	T4B
86	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R622	T3D
87	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R117	B3F
88	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R525	B2G
89	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R103	B4G
90	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R106	B3E
91	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R121	T4F
92	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R205	T4D
93	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R217	T3D
94	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R313	B4H
95	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R610	T4B
96	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R611	T4B
97	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R612	T4B
98	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R616	T4G
99	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R617	T4G
100	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R620	T4B
101	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R624	T4E
102	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R630	T2G
103	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R631	T3H
104	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R607	T3G

105	3001054740000	Chip resistor 0402 470KΩ J 1/16W(RoHS)	1	R212	T5E
106	3001054740000	Chip resistor 0402 470KΩ J 1/16W(RoHS)	1	R517	B3H
107	3001055620000	Chip resistor 0402 5.6KΩ J 1/16W(RoHS)	1	R211	T4E
108	3001055630000	Chip resistor 0402 56KΩ J 1/16W(RoHS)	1	R632	T3G
109	3001056820000	Chip resistor 0402 6.8KΩ J 1/16W(RoHS)	1	R208	T4D
110	3001056820000	Chip resistor 0402 6.8KΩ J 1/16W(RoHS)	1	R529	B2G
111	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R102	B4H
112	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R124	B4F
113	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R304	B4H
114	3001056840000	Chip resistor 0402 680KΩ J 1/16W(RoHS)	1	R501	B3H
115	3001057520000	Chip resistor 0402 7.5KΩ J 1/16W(RoHS)	1	R118	B3E
116	3001058200000	Chip resistor 0402 82Ω F 1/16W(RoHS)	1	R526	B3G
117	3001058220000	Chip resistor 0402 8.2KΩ J 1/16W(RoHS)	1	R209	B3F
118	3001058220000	Chip resistor 0402 8.2KΩ J 1/16W(RoHS)	1	R606	T4C
119	3001060000000	Chip resistor 0603 0Ω J 1/10W(RoHS)	1	L105	B3F
120	3001061010000	Chip resistor 0603 100Ω J 1/10W(RoHS)	1	R418	T2B
121	3001061010000	Chip resistor 0603 100Ω J 1/10W(RoHS)	1	R605	T3A
122	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R411	B2D
123	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R412	B2D
124	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R416	B2D
125	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R417	B2C
127	3001064700000	Chip resistor 0603 47Ω J 1/10W(RoHS)	1	R410	B2D
128	3001064700000	Chip resistor 0603 47Ω J 1/10W(RoHS)	1	R415	B3C
129	3001064710000	Chip resistor 0603 470Ω J 1/10W(RoHS)	1	R634	B5A
130	3001064710000	Chip resistor 0603 470Ω J 1/10W(RoHS)	1	R609	B5A
131	3001066810010	Chip resistor 0603 680Ω J 1/10W(RoHS)	1	R625	T4A
132	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R419	T3B
133	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R420	T3B
134	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R421	T3B
135	3005051020010	Resistor array 0402 1K*4 J 1/16W(RoHS)	1	RN101	T4F
136	3002991030150	Adjustable resistor(2.7*2.0*0.9) 10KΩ ±30%(RoHS)	1	VR101	B4H
137	3002991030150	Adjustable resistor(2.7*2.0*0.9) 10KΩ ±30%(RoHS)	1	VR601	T3G
138	3101050390000	Chip capacitor 0402 0.3PF B 50V Hi-Q (RoHS)	1	C534	B3H
139	3101050590010	Chip capacitor 0402 0.5PF B 50V Hi-Q(RoHS)	1	C109	B3E
140	3101050590010	Chip capacitor 0402 0.5PF B 50V Hi-Q(RoHS)	1	C144	B3F
141	3101050100010	Chip capacitor 0402 1PF B 50V Hi-Q(RoHS)	1	C527	T2H
142	3101051590000	Chip capacitor 0402 1.5PF B 50(RoHS)	1	C431	B3A
143	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C428	B3A
144	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C433	B3A
145	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C401	B2F
146	3101050800000	Chip capacitor 0402 8PF B 50V (RoHS)	1	C149	B4F
147	3199052290000	Chip capacitor 0402 2.2PF B 50V Hi-Q(RoHS)	1	C110	B3E
148	3101050300000	Chip capacitor 0402 3PF B 50V(RoHS)	1	C130	B3E
149	3101050300000	Chip capacitor 0402 3PF B 50V(RoHS)	1	C501	B2B
150	3101050300000	Chip capacitor 0402 3PF B 50V(RoHS)	1	C545	B3H
151	3101053690000	Chip capacitor 0402 3.6PF B 50V (RoHS)	1	C432	B3A
152	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	1	C502	B2B
153	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	1	C421	B3B
154	3199054790000	Chip capacitor 0402 4.7PF C 50V(RoHS)	1	C430	B3A
155	3101050500000	Chip capacitor 0402 5PF D 50V(RoHS)	1	C434	B3A
156	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C406	B2F
157	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C439	B2F
158	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C148	B3E
159	3101050900000	Chip capacitor 0402 9PF B 50V (RoHS)	1	C112	B3F

160	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C103	B5G
161	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C104	B4G
162	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C107	B3E
163	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C211	T4E
164	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C530	T2H
165	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	L514	B3H
166	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C106	B4E
167	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C638	T2E
168	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C639	T2F
169	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C544	B3H
170	3101051800010	Chip capacitor 18PF J 50V(RoHS)	1	C423	B3B
171	3101052200010	Chip capacitor 22PF J 50V (RoHS)	1	C538	B3I
172	3101052700000	Chip capacitor 27PF J 50V(RoHS)	1	C517	B2H
173	3101053300000	Chip capacitor 0402 33PF J 50V(RoHS)	1	C306	B4H
174	3101053300000	Chip capacitor 0402 33PF J 50V(RoHS)	1	C526	B3H
175	3101053300000	Chip capacitor 0402 33PF J 50V(RoHS)	1	C415	B3D
176	3101054700010	Chip capacitor 0402 47PF J 50V (RoHS)	1	C404	B2E
177	3101055600000	Chip capacitor 0402 56PF J 50V(RoHS)	1	C418	B3B
178	3101058200000	Chip capacitor 0402 82PF J 50V(RoHS)	1	C529	T3H
179	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C117	B3F
180	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C119	T4F
181	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C121	T5F
182	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C122	B3F
183	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C124	T5F
184	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C125	T5F
185	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C131	B4E
186	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C150	B3F
187	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C202	B2E
188	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C407	B3F
189	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C411	B2F
190	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C614	T3G
191	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C629	T4E
192	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C523	B2H
193	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C512	B2B
194	3101051810000	Chip capacitor 0402 180PF J 50V(RoHS)	1	C507	B3G
195	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C142	B3E
196	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C147	B3F
197	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C209	T5D
198	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C307	B4H
199	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C308	B3H
200	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C309	B3H
201	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C403	T2B
202	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C405	B2E
203	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C416	B3D
204	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C424	B2D
205	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C426	T2B
206	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C440	B3B
207	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C443	T2B
208	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C444	T3B
209	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C445	T2A
210	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C446	T2B
211	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C447	T2B
212	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C504	B2G
213	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C506	T2G

214	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C524	B2H
215	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C601	T3A
216	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C611	T3E
217	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C622	T4G
218	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C623	T4A
219	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C624	T4B
220	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C625	T4A
221	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C626	T4B
222	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C632	T2D
223	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C633	T2C
224	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C636	T2E
225	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C641	T1B
226	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C644	T2D
227	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C631	T2E
228	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C102	B5G
229	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C105	B4E
230	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C120	B4H
231	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C126	B4H
232	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C133	B2E
233	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C139	B3E
234	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C141	B2E
235	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C145	B3E
236	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C216	T3D
237	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C219	T3D
238	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C412	B2D
239	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C413	B3D
240	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C417	B2C
241	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C425	B2B
242	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C427	B2B
243	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C539	B3I
244	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C541	B3H
245	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C546	B2G
246	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C604	B4C
247	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C605	T2E
248	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C608	T4C
249	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C613	T4C
250	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C616	T2G
251	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C617	T4C
252	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C619	T2H
253	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C620	T2H
254	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C640	T4C
255	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C648	T2G
256	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C651	T4D
257	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C310	B4H
258	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C204	T4E
259	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C647	T5E
260	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C138	B2E
261	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C437	B3B
262	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C508	T2G
263	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C510	T2H
264	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C513	T2G
265	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C514	T2H
266	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C540	B3I
267	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C607	T4C

268	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C612	T4C
269	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C635	T2E
270	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C637	T2F
271	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C645	T4B
272	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C646	T4B
273	3101052230000	Chip capacitor 0402 0.022UF K 16V(RoHS)	1	C212	T4E
274	3101052230000	Chip capacitor 0402 0.022UF K 16V(RoHS)	1	C642	T3G
275	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C101	B3F
276	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C123	B5H
277	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C127	B4G
278	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C134	B3E
279	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C135	B2F
280	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C146	B3F
281	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C217	T2D
282	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C218	T2D
283	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C304	T3A
284	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C311	T3A
285	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C312	T3A
286	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C313	T3A
287	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C408	B3F
288	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C422	T2B
289	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C436	B3B
290	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C438	T2A
291	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C441	T3B
292	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C520	B4H
293	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C528	T3H
294	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C603	B4C
295	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C536	B2G
296	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C220	T3D
297	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C118	B4G
298	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C208	T5D
299	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C213	T4E
300	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C215	B4F
301	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C519	T3H
302	3101053340010	Capacitor 0402 0.33UF X5R K 6.3V(RoHS)	1	C301	T3A
303	3101053340010	Capacitor 0402 0.33UF X5R K 6.3V(RoHS)	1	C316	T3B
304	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C203	T4E
305	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C207	T4E
306	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C315	B4H
307	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C547	B3H
308	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C627	T4E
309	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C628	T4E
310	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C630	T3E
311	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C634	T2E
312	3101061200000	Chip capacitor 0603 12PF J 50V(RoHS)	1	C419	B2B
313	3101061020000	Chip capacitor 0603 1000PF K 50V (RoHS)	1	C435	B2A
314	3101064740000	Chip capacitor 0603 0.47UF K 25V (RoHS)	1	C302	T3B
315	3101065630000	Chip capacitor 0603 0.056uF K 50V(RoHS)	1	C114	B4F
316	3101065630000	Chip capacitor 0603 0.056uF K 50V(RoHS)	1	C116	B5E
317	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C609	T4C
318	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C610	T4B
319	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C615	T2G
320	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C621	T2H
321	3101062250000	Chip capacitor 0603 2.2UF K 10V (RoHS)	1	C618	T4C

322	3104071050070	Tantalum capacitor 0805 1UF M 16V (RoHS)	1	C420	B2C
323	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C128	B4G
324	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C140	B3E
325	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C201	T2E
326	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C206	T4E
327	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C210	B3F
328	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C305	T3A
329	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C442	T3A
330	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C602	B5B
331	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C606	T5D
332	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C643	T4C
333	3104074750070	Tantalum capacitor 0805 4.7UF M 10V (RoHS)	1	C132	B4G
334	3104081050090	Tantalum capacitor 1206 1UF M 16V (RoHS)	1	C115	B5E
335	3102992000040	Adjustable capacitor 3.2*2.5*1.25mm (RoHS)	1	TC101	B3E
336	3210305479000	Multi-layer chip inductor 0402 4.7nH LQG1 (RoHS)	1	L513	B1E
337	3210305150010	Multi-layer chip inductor 0402 15nH LQG15 (RoHS)	1	L508	B3H
338	3210305150010	Multi-layer chip inductor 0402 15nH LQG15 (RoHS)	1	L511	B3H
339	3210305150010	Multi-layer chip inductor 0402 15nH LQG15 (RoHS)	1	L504	B2H
340	3210305220000	Multi-layer chip inductor 0402 22nH LQG15 (RoHS)	1	L111	B4F
341	3210305220000	Multi-layer chip inductor 0402 22nH LQG15 (RoHS)	1	L401	B2E
342	3210305220000	Multi-layer chip inductor 0402 22nH LQG15 (RoHS)	1	L416	B2F
343	3210305220000	Multi-layer chip inductor 0402 22nH LQG15 (RoHS)	1	L516	T2H
344	3210305330000	Multi-layer chip inductor 0402 33nH (RoHS)	1	L402	B2F
345	3210305330000	Multi-layer chip inductor 0402 33nH (RoHS)	1	L503	B2H
346	3212105470000	Multi-layer chip inductor 0402 47nH (RoHS)	1	L404	B3F
347	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R509	T2G
348	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R510	T2G
349	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R513	T2G
350	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R514	T2G
351	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	L505	B3H
352	3210306479000	Multi-layer chip inductor 0603 4.7nH LQG1 (RoHS)	1	L405	B2D
353	3210306479000	Multi-layer chip inductor 0603 4.7nH LQG1 (RoHS)	1	L408	B3D
354	3210306479000	Multi-layer chip inductor 0603 4.7nH LQG1 (RoHS)	1	R414	B3C
355	3213306561000	Multi-layer chip inductor 0603 0.56uH MLF (RoHS)	1	L411	B2B
356	3213306102000	Multi-layer chip inductor 0603 1uH MLF160 (RoHS)	1	L110	B4G
357	3213306102000	Multi-layer chip inductor 0603 1uH MLF160 (RoHS)	1	L201	T4D
358	3213306222000	Multi-layer chip inductor 0603 2.2uH MLF1 (RoHS)	1	L509	B3H
359	3213306332000	Multi-layer chip inductor 0603 3.3uH MLF1 (RoHS)	1	L102	B4E
360	3213306332000	Multi-layer chip inductor 0603 3.3uH MLF1 (RoHS)	1	L103	B4E
361	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L101	B4E
362	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L106	B2E
363	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L107	B4H
364	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L108	B4G
365	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L109	B4H
366	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L417	B2E
367	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L602	T2E
368	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L603	T3D
369	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L605	T4E
370	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L606	T4E
371	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L410	B3B
372	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L601	T4B
373	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L607	T4B
374	3221507221000	Chip ferrite bead 0805 220Ω±25%(RoHS)	1	L407	B3D
375	3231301250000	Air-core inductor E2-0.30*1.2*5TL(RoHS)	1	L406	B3D

376	3210108270000	Bobbin inductor 1206 27nH LQW31HN27NJ03L(RoHS)	1	L104	B3E
377	3210209102010	Bobbin inductor 1210 1uH LQH32M(RoHS)	1	L415	B2A
378	3231351630000	Air-core inductor E2-0.35*1.6*3TR (RoHS)	1	L501	B2B
379	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L412	B3A
380	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L413	B3A
381	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L414	B3A
382	3231351650000	Air-core inductor E2-0.35*1.6*5TL(RoHS)	1	L409	B3B
383	3304060300050	Varactor HVC350BTRF-E(RoHS)	1	D101	B4E
384	3304060300050	Varactor HVC350BTRF-E(RoHS)	1	D102	B4E
385	3304040200000	Varactor BB179 SOD523(RoHS)	1	D103	B3E
386	3303020100020	Switching diode MA2S11100L SS-mini(RoHS)	1	D104	B3E
387	3303030800040	Switching diode 1SS356 SOD-323 35V 100mA(RoHS)	1	D401	B2B
388	3303030800040	Switching diode 1SS356 SOD-323 35V 100mA(RoHS)	1	D501	B2B
389	3303060300010	Switching diode HVC131TRF-E (RoHS)	1	D105	B3E
390	3303060300010	Switching diode HVC131TRF-E (RoHS)	1	D502	B1F
391	3303060300010	Switching diode HVC131TRF-E (RoHS)	1	D503	B1F
392	3303060300010	Switching diode HVC131TRF-E (RoHS)	1	D504	B1H
393	3303060300010	Switching diode HVC131TRF-E (RoHS)	1	D505	B1H
394	3307110100080	【wetproof】LED KPT-1608SGC(RoHS)	1	D601	T4A
395	3307110100080	【wetproof】LED KPT-1608SGC(RoHS)	1	D603	B5A
396	3307110100060	【wetproof】LED KPT-1608SURC(RoHS)	1	D602	T4A
397	3307110100060	【wetproof】LED KPT-1608SURC(RoHS)	1	D604	B5A
398	3309030600000	Noise-clipping diode RSA6.1EN(RoHS)	1	D605	T4B
399	3309030600000	Noise-clipping diode RSA6.1EN(RoHS)	1	D606	T4D
400	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D607	B4C
401	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D608	B4D
402	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D610	T4H
403	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D506	T3I
404	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D301	T3A
405	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D402	B2D
406	3411002000020	Transistor 2SC5343EG (RoHS)	1	Q101	B2E
407	3404002000000	Transistor PRF957 (RoHS)	1	Q102	B3F
408	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q103	B2F
409	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q405	T2B
410	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q501	T2G
411	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q604	T2G
412	3418001000010	Transistor AT-41511-TR1G (RoHS)	1	Q503	B2H
413	3401002000990	Transistor 2SC5108-Y(TE85L)(RoHS)	1	Q104	B4F
414	3401002000990	Transistor 2SC5108-Y(TE85L)(RoHS)	1	Q504	B3H
415	3401001000490	Transistor 2SA1832-GR(TE85L)(RoHS)	1	Q201	T3D
416	3503020000030	Field Effect Transistor(FET) 2SK1824-T1-A(RoHS)	1	Q202	T2D
417	3408002000030	Transistor 2SC4226-R24-A(RoHS)	1	Q401	B2F
418	3408002000030	Transistor 2SC4226-R24-A(RoHS)	1	Q505	B3H
419	3502010000130	Field Effect Transistor 2SK3078(TE12L.F)(RoHS)	1	Q402	B3D
420	3515990000000	Field Effect Transistor RQA0002DNSTB-E(RoHS)	1	Q403	B3C
421	3403007000020	Transistor DTA114YE(TL) (RoHS)	1	Q404	T2B
422	3403007000020	Transistor DTA114YE(TL) (RoHS)	1	Q502	T2G
423	3410001000020	Transistor 2SA1745 (RoHS)	1	Q601	T2G
424	3410001000020	Transistor 2SA1745 (RoHS)	1	Q602	T2H
425	4301080000020	Momentary contact switch(RoHS)	1	SW601	T3A
426	4301080000090	Momentary contact switch (2.55N)(RoHS)	1	SW604	T1B
427	4301080000090	Momentary contact switch (2.55N)(RoHS)	1	SW605	T1D
428	5205005000020	MINI USB port 5P(RoHS)	1	J201	B4D
429	5205006000010	Accessory jack LGK1503-03xx(RoHS)	1	J202	B4C

430	3602999000000	Audio amplification IC AP4890 BTL 1W(RoHS)	1	U301	T3A
431	3605008005070	Operational Amplifier NJM2904V dual-operation J(RoHS)	1	U401	T2B
432	41003201001B0	TC-320 RF PCB (RoHS)	1	U501	B3G
433	3610999000060	SCM SRT3210 100Pin H(RoHS)	1	U601	T3F
434	3609049000010	IC LDO regulator RT9011PP 3.(RoHS)	1	U602	T4C
435	3612031000510	Memory AT24C16AN-10SU-2(RoHS)	1	U603	T4G
436	3615042000010	【wetproof】Charge management IC(RoHS)	1	U604	T4D
437	3609006000000	Reset IC R3112Q271A-TR-F (RoHS)	1	U605	T5E
438	3701212540030	Temperature Compensated Crystal Oscillator (RoHS)	1	XT101	B4G
439	41003003000D0	main PCB FR4 1.2T/4L/4P E(RoHS)	1	PCB	
440	6201648000000	VCO shielding mask 0.30mm 00 (RoHS)	1		
441	6201651000000	Filter shielding mask 0.20mm 00 (RoHS)	1		
442	7000183000000	Heat-sinking module 3*5mm 00 (RoHS)	1		
443	3701327610060	Clock Crystal 32.768KHz 12.5pF 20ppm(RoHS)	1	X601	T2F
444	41003203000G0	PCB board FR4 4L 4P (RoHS)	1		

TC-320 (400-420MHZ) Parts Change Record

TC-320 (400-420MHz) Parts Change Record										
Before Change (TC-320 VF)						After Change (TC-320 VG)				
No.	Part No.	Description	Ref No.	Print No.	Qty.	Part No.	Description	Ref No.	Print No.	Qty.
1	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	C517	B2H	1	3101052700000	Chip capacitor GRM1555C1H270J 27PF J 50V(RoHS)	C517	B2H	1
2	None	None	L503	B2H	0	3210305330000	Multi-layer chip inductor 33nH LQG15HS33NJ02（RoHS）	L503	B2H	1
3	None	None	R528	B2G	0	3001051230000	Chip resister 0402 12KΩ J 1/16W(RoHS)	R528	B2G	1
4	None	None	R529	B2G	0	3001056820000	Chip resister 0402 6.8KΩ J 1/16W(RoHS)	R529	B2G	1
5	None	None	C523	B2H	0	3101051010030	Chip resister 0402 100PF J 50V(RoHS)	C523	B2H	1
6	3001051000020	Chip resister 0402 10Ω F 1/16W (RoHS)	R525	B2G	1	3001054720000	Chip resister 0402 4.7KΩ J 1/16W(RoHS)	R525	B2G	1
7	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	C507	B3G	1	3101051810000	Chip capacitor 0402 180PF J 50V(RoHS)	C507	B3G	1
8	3210305150010	Multi-layer chip inductor 15nH LQG15HS15NJ02(RoHS)	L505	B3H	1	3210305101000	Multi-layer chip inductor 100nH LQG15HSR10J02（RoHS）	L505	B3H	1
9	None	None	Q503	B2H	0	3418001000010	Transistor AT-41511-TR1G (RoHS)	Q503	B2H	1
10	3001053330000	Chip resister 0402 33KΩ F 1/16W(RoHS)	R527	B2H	1	3001050000000	Chip resister 0402 0Ω J 1/16W (RoHS)	R527	B2H	1
11	None	None	C530	T2H	0	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	C530	T2H	1
12	None	None	L516	T2H	0	3210305220000	Multi-layer chip inductor 22nH LQG15HS22NJ02(RoHS)	L516	T2H	1

13	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	C525	T2H	1	None	None	C525	T2H	0
14	None	None	C527	T2H	0	3101050100010	Chip capacitor 0402 1PF B 50V Hi-Q(RoHS)	C527	T2H	1
15	None	None	C536	B2G	0	3101051040060	Chip capacitor 0402 0.1UF K 16(RoHS)	C536	B2G	1
16	3001052210000	Chip resister 0402 220Ω J 1/16W(RoHS)	R526	B3G	1	3001058200000	Chip resister 0402 82Ω F 1/16W(RoHS)	R526	B3G	1
17	None	None	R530	B2G	0	3001051000020	Chip resister 0402 10Ω F 1/16W (RoHS)	R530	B2G	1
18	None	None	R634	B5A	0	3001064710000	Chip resister 0603 470Ω J 1/10W(RoHS)	R634	B5A	1
19	None	None	R609	B5A	0	3001064710000	Chip resister 0603 470Ω J 1/10W(RoHS)	R609	B5A	1
20	None	None	C651	T4D	0	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	C651	T4D	1
21	None	None	C220	T3D	0	3101051040060	Chip capacitor 0402 0.1UF K 16W(RoHS)	C220	T3D	1
22	None	None	L607	T4B	0	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	L607	T4B	1
23	None	None	R606	T4C	0	3001058220000	Chip resister 0402 8.2KΩ J 1/16W(RoHS)	R606	T4C	1
24	3101052000020	Chip capacitor 0402 20PF J 50V(RoHS)	C512	B1E	1	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	C512	B2B	1
25	3303060300010	Switching diode HVC131TRF-E (RoHS)	D504	B2H	1	3303060300010	Switching diode HVC131TRF-E (RoHS)	D504	B1H	1
26	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	L601	T3B	1	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	l601	T4B	1

27	41003203000F0	TC-320 main PCB FR4 1.2T/4L/4P F (RoHS)			1	41003203000G0	PCB board FR4 4L 4P (RoHS)			1
28	41003001001A0	TC-310/320 RF PCB(RoHS)			1	41003201001B0	)TC-320 RF PCB (RoHS)			1
29	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	C543	B3I	1	None	None	C543	B3I	0
30	3401002000790	Transistor 2SC5065-O(TE85L.F)(RoHS)	Q506	B2G	1	None	None	Q506	B2G	0
31	3210305180000	Multi-layer chip inductor 18nH LQG15HS18NJ02(RoHS)	L506	B2H	1	None	None	L506	B2H	0
32	3001051020000	Chip resister 0402 1KΩ F 1/16W (RoHS)	R504	B2H	1	None	None	R504	B2H	0
33	3101051040060	Chip capacitor GRM155R71C104KA88D 0.1UF K 16V(RoHS)	C518	B2H	1	None	None	C518	B2H	0
34	3001055610000	Chip resister 0402 560Ω J 1/16W(RoHS)	R503	T2G	1	None	None	R503	T2G	0
35	3101051020010	Chip capacitor GRM36X7R102K50PT 1000PF K 50V(RoHS)	C521	T2G	1	None	None	C521	T2G	0
36	3001080000000	Chip resister 1206 0Ω J 1/4W(RoHS)	C314	T4A	1	None	None	C314	T4A	0
37	3615999000000	Charging IC CN3062 SOP8 Li-ion (RoHS)	U604	T4D	1	3615042000010	Charge management IC MC34673AEP/R2 8-UDFN(RoHS)	U604	T4D	1
38	3101062730000	Chip capacitor 0603 0.027UF K 25V(RoHS)	C114	B4F	1	3101065630000	Chip capacitor 0603 0.056uF K 50V(RoHS)	C114	B4F	1
39	3101061830000	Chip capacitor 0603 0.018UF K 25V(RoHS)	C116	B5E	1	3101065630000	Chip capacitor 0603 0.056uF K 50V(RoHS)	C116	B5E	1
40	3101061300000	Chip capacitor 0603 13PF J 50V(RoHS)	C419	B2B	1	3101061200000	Chip capacitor 0603 12PF J 50V(RoHS)	C419	B2B	1
41	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	C423	B3B	1	3101051800010	Chip capacitor GRM1555C1H180JZ01J 18PF J 50V(RoHS)	C423	B3B	1
42	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	C515	B1E	1	None	None	C515	B1E	0

43	3001050000000	Chip resister 0402 0Ω J 1/16W (RoHS)	L514	B3H	1	3210305100010	Multi-layer chip inductor 0402 10nH LQG15(RoHS)	L514	B3H	1
44	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	C545	B3H	1	3101050300000	Chip capacitor 0402 3PF B 50V(RoHS)	C545	B3H	1
46	3101050590010	Chip capacitor 0402 0.5PF B 50V Hi-Q(RoHS)	C534	B3H	1	3101050390000	Chip capacitor 0402 0.3PF B 50V Hi-Q (RoHS)	C534	B3H	1
48	3104071050070	Tantalum capacitor 1UF M 16V TEESVP1C105M8R(RoHS)	C132	B4G	1	3104074750070	Tantalum capacitor TEESVP1A475M8R 4.7UF M 10V (RoHS)	C132	B4G	1
49	3210305479000	Multi-layer chip inductor 4.7nH LQG15HS4N7S02（RoHS）	L504	B2H	1	3210305150010	Multi-layer chip inductor 0402 15nH LQG15HS15NJ02(RoHS)	L504	B2H	1

TC-320U(2) VG Parts List 1 (450-470MHz)					
No.	Part No.	Description	Qty.	Ref No.	Print No.
1	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R222	T3G
2	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R223	T3G
3	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R518	B3H
4	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	L510	B2H
5	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R314	T3B
6	3001050000000	Chip resistor 0402 0Ω J 1/16W (RoHS)	1	R527	B2H
7	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R101	B4H
8	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R119	B3F
9	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R311	T3A
10	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R516	B3I
11	3001051000020	Chip resistor 0402 10Ω F 1/16W (RoHS)	1	R530	B2G
12	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R604	T2E
13	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R614	T4E
14	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R621	T4E
15	3001051010040	Chip resistor 0402 100Ω F 1/16W (RoHS)	1	R623	T4E
16	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R109	B4E
17	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R114	B3E
18	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R309	T4D
19	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R207	T2G
20	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R214	T3D
21	3001051020000	Chip resistor 0402 1KΩ F 1/16W (RoHS)	1	R613	T2G
22	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R107	B4E
23	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R116	B3E
24	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R120	B3F
25	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R210	T5E
26	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R219	T2D
27	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R301	T3A
28	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R409	T2B
29	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R428	T2B
30	3001051030000	Chip resistor 0402 10KΩ J 1/16W (RoHS)	1	R118	B3E
31	3001051040000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R213	T3D
32	3001051040000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R112	B2E
33	3001051050000	Chip resistor 0402 1MΩ F 1/16W (RoHS)	1	R218	T2D
34	3001051050000	Chip resistor 0402 1MΩ F 1/16W (RoHS)	1	R405	T2B
35	3001051220000	Chip resistor 0402 1.2KΩ J 1/16W(RoHS)	1	R220	T4E
36	3001051230000	Chip resistor 0402 12KΩ F 1/16W (RoHS)	1	R224	T3G
37	3001051230000	Chip resistor 0402 12KΩ F 1/16W (RoHS)	1	R528	B2G
38	3001051530000	Chip resistor 0402 15KΩ J 1/16W (RoHS)	1	R406	T2A
39	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R422	T3A
40	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R423	T3B
41	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R424	T3B
42	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R425	T3B
43	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R426	T3A
44	3001051540000	Chip resistor 0402 100KΩ F 1/16W (RoHS)	1	R427	T2A
45	3001052200000	Chip resistor 0402 22Ω J 1/16W (RoHS)	1	R429	B2F
46	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R110	B4E
47	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R202	T2D
48	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R216	T3D
49	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R306	B3H
50	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R407	T2B
51	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R507	B3H
52	3001052220000	Chip resistor 0402 2.2KΩ J 1/16W (RoHS)	1	R615	T3H

53	3001052230010	Chip resistor 0402 22KΩ J 1/16W(RoHS)	1	R215	T3D
54	3001052230010	Chip resistor 0402 22KΩ J 1/16W(RoHS)	1	R312	B4H
55	3001052240010	Chip resistor 0402 220KΩ F 1/16W (RoHS)	1	R602	T2E
56	3001052240010	Chip resistor 0402 220KΩ F 1/16W (RoHS)	1	R603	T2E
57	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R115	B3E
58	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R505	B2I
59	3001052710010	Chip resistor 0402 270Ω J 1/16W(RoHS)	1	R506	B3H
60	3001052720010	Chip resistor 0402 2.7KΩ F 1/16W(RoHS)	1	R502	T3H
61	3001052730010	Chip resistor 0402 27KΩ F 1/16W (RoHS)	1	R408	T2A
62	3001052740000	Chip resistor 0402 27KΩ J 1/16W(RoHS)	1	R303	B3H
63	3001053310010	Chip resistor 0402 330Ω J 1/16W (RoHS)	1	R404	B2E
64	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R203	T4E
65	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R204	T4E
66	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R305	B4H
67	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R307	B4H
68	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R401	B2F
69	3001053320000	Chip resistor 0402 3.3KΩ J 1/16W(RoHS)	1	R402	B2E
70	3001053330000	Chip resistor 0402 33KΩ F 1/16W (RoHS)	1	R125	B4H
71	3001053920010	Chip resistor 0402 3.9KΩ J 1/16W(RoHS)	1	R606	T4D
72	3001053920010	Chip resistor 0402 3.9KΩ J 1/16W(RoHS)	1	R633	T3G
73	3001053930000	Chip resistor 0402 39KΩ J 1/16W(RoHS)	1	R302	T3A
74	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R308	T3A
75	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R310	T3A
76	3001054790000	Chip resistor 0402 4.7Ω J 1/16W(RoHS)	1	R403	B2E
77	3001054700000	Chip resistor 0402 47Ω J 1/16W (RoHS)	1	R111	B4E
78	3001054700000	Chip resistor 0402 47Ω J 1/16W (RoHS)	1	R123	B3F
79	3001054700000	Chip resistor 0402 47Ω J 1/16W (RoHS)	1	R618	T4G
80	3001054700000	Chip resistor 0402 47Ω J 1/16W(RoHS)	1	R619	T3G
81	3001054710000	Chip resistor 0402 47Ω J 1/16W (RoHS)	1	R201	T2D
82	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R112	B3E
83	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R206	T3G
84	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R511	B2H
85	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R512	B1E
86	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R608	T4B
87	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R622	T3D
88	3001054720000	Chip resistor 0402 4.7KΩ J 1/16W(RoHS)	1	R525	B2G
89	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R103	B4G
90	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R607	T3G
91	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R106	B3E
92	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R121	T4F
93	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R205	T4D
94	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R217	T3D
95	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R313	B4H
96	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R610	T4B
97	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R611	T4B
98	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R612	T4B
99	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R616	T4G
100	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R617	T4G
101	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R620	T4B
102	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R624	T4E
103	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R630	T2G
104	3001054730000	Chip resistor 0402 47KΩ J 1/16W(RoHS)	1	R631	T3H
105	3001054740000	Chip resistor 0402 470KΩ J 1/16W(RoHS)	1	R212	T5E
106	3001054740000	Chip resistor 0402 470KΩ J 1/16W(RoHS)	1	R517	B3H

107	3001055620000	Chip resistor 0402 5.6KΩ J 1/16W(RoHS)	1	R211	T4E
108	3001056820000	Chip resistor 0402 6.8KΩ J 1/16W(RoHS)	1	R208	T4D
109	3001056820000	Chip resistor 0402 6.8KΩ J 1/16W(RoHS)	1	R529	B2G
110	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R102	B4H
111	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R124	B4F
112	3001056830000	Chip resistor 0402 68KΩ J 1/16W(RoHS)	1	R304	B4H
113	3001056840000	Chip resistor 0402 680KΩ J 1/16W(RoHS)	1	R501	B3H
114	3001057520000	Chip resistor 0402 7.5KΩ J 1/16W(RoHS)	1	R117	B3F
115	3001058200000	Chip resistor 0402 82Ω F 1/16W(RoHS)	1	R526	B3G
116	3001058220000	Chip resistor 0402 8.2KΩ J 1/16W(RoHS)	1	R209	B3F
117	3001058220000	Chip resistor 0402 8.2KΩ J 1/16W(RoHS)	1	R606	T4C
118	3001058230000	Chip resistor 0402 82KΩ J 1/16W(RoHS)	1	R632	T3G
119	3001060000000	Chip resistor 0603 0Ω J 1/10W(RoHS)	1	L105	B3F
120	3001061010000	Chip resistor 0603 100Ω J 1/10W(RoHS)	1	R418	T2B
121	3001061010000	Chip resistor 0603 100Ω J 1/10W(RoHS)	1	R605	T3A
122	3001061230000	Chip resistor 0603 12KΩ J 1/10W(RoHS)	1	R417	B2C
123	3001061530000	Chip resistor 0603 15KΩ D 1/10W(RoHS)	1	R416	B2D
124	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R411	B2D
125	3001062230000	Chip resistor 0603 22KΩ J 1/10W(RoHS)	1	R412	B2D
126	3001063310010	Chip resistor 0603 330Ω J 1/10W(RoHS)	1	R609	T5D
127	3001064700000	Chip resistor 0603 47Ω J 1/10W(RoHS)	1	R410	B2D
128	3001064700000	Chip resistor 0603 47Ω J 1/10W(RoHS)	1	R415	B3C
129	3001064710000	Chip resistor 0603 470Ω J 1/10W(RoHS)	1	R634	B5A
130	3001064710000	Chip resistor 0603 470Ω J 1/10W(RoHS)	1	R609	B5A
131	3001066810010	Chip resistor 0603 680Ω J 1/10W(RoHS)	1	R625	T4A
132	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R419	T3B
133	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R420	T3B
134	3099080398000	Chip resistor 1206 0.39Ω J 1/4W(RoHS)	1	R421	T3B
135	3005051020010	Resistor array 0402 1K*4 J 1/16W(RoHS)	1	RN101	T4F
136	3002991030150	Adjustable resistor(2.7*2.0*0.9) 10KΩ ±30%(RoHS)	1	VR101	B4H
137	3002991030150	Adjustable resistor(2.7*2.0*0.9) 10KΩ ±30%(RoHS)	1	VR601	T3G
138	3101050390000	Chip capacitor 0402 0.3PF B 50V Hi-Q (RoHS)	1	C534	B3H
139	3101050590010	Chip capacitor 0402 0.5PF B 50V(RoHS)	1	C109	B3E
140	3101050590010	Chip capacitor 0402 0.5PF B 50(RoHS)	1	C144	B3F
141	3101050100030	Chip capacitor 0402 1PF B 50V(RoHS)	1	C545	B3H
142	3101050100030	Chip capacitor 0402 1PF B 50V(RoHS)	1	C527	T2H
143	3101051590000	Chip capacitor 0402 1.5PF B 50V(RoHS)	1	C431	B3A
144	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C110	B3E
145	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C401	B2F
146	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C428	B3A
147	3101050200010	Chip capacitor 0402 2PF B 50V(RoHS)	1	C433	B3A
148	3199052290000	Chip capacitor 0402 2.2PF B 50V Hi-Q(RoHS)	1	C130	B3E
149	3101052490010	Chip capacitor 0402 2.4PF B 50V(RoHS)	1	C432	B3A
150	3101050300000	Chip capacitor 0402 3PF B 50V(RoHS)	1	C434	B3A
151	3101053690000	Chip capacitor 0402 3.6PF B 50V (RoHS)	1	C501	B2B
152	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	1	C148	B3E
153	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	1	C502	B2B
154	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	1	C421	B3B
155	3199054790000	Chip capacitor 0402 4.7PF C 50V(RoHS)	1	C430	B3A
156	3199054790000	Chip capacitor 0402 4.7PF C 50V(RoHS)	1	C544	B3H
157	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C112	B3F
158	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C406	B2F
159	3101050600010	Chip capacitor 0402 6PF B 50V(RoHS)	1	C439	B2F
160	3101050800000	Chip capacitor 0402 8PF B 50V (RoHS)	1	C149	B4F

161	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C103	B5G
162	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C104	B4G
163	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C107	B3E
164	3101051000020	Chip capacitor 0402 10PF J 50V(RoHS)	1	C211	T4E
165	3101051200020	Chip capacitor 0402 12PF J 50V(RoHS)	1	C423	B3B
166	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C106	B4E
167	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C638	T2E
168	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C639	T2F
169	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	1	C530	T2H
170	3101052200010	Chip capacitor 0402 22PF J 50V(RoHS)	1	C538	B3I
171	3101052200010	Chip capacitor 0402 22PF J 50V(RoHS)	1	C517	B2H
172	3101053300000	Chip capacitor 0402 33PF J 50V(RoHS)	1	C306	B4H
173	3101053300000	Chip capacitor 0402 33PF J 50V(RoHS)	1	C526	B3H
174	3101053900000	Chip capacitor 0402 39PF J 50V(RoHS)	1	C418	B3B
175	3101054700010	Chip capacitor 0402 47PF J 50V (RoHS)	1	C404	B2E
176	3101054700010	Chip capacitor 0402 47PF J 50V (RoHS)	1	C415	B3D
177	3101058200000	Chip capacitor 0402 82PF J 50V(RoHS)	1	C529	T3H
178	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C117	B3F
179	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C119	T4F
180	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C121	T5F
181	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C122	B3F
182	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C124	T5F
183	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C125	T5F
184	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C131	B4E
185	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C150	B3F
186	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C202	B2E
187	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C407	B3F
188	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C411	B2F
189	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C614	T3G
190	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C629	T4E
191	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C523	B2H
192	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	1	C512	B2B
193	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C142	B3E
194	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C147	B3F
195	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C209	T5D
196	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C307	B4H
197	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C308	B3H
198	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C309	B3H
199	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C403	T2B
200	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C405	B2E
201	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C416	B3D
202	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C424	B2D
203	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C426	T2B
204	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C440	B3B
205	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C443	T2B
206	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C444	T3B
207	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C445	T2A
208	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C446	T2B
209	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C447	T2B
210	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C504	B2G
211	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C506	T2G
212	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C524	B2H
213	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C525	B2G
214	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C601	T3A

215	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C611	T3E
216	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C622	T4G
217	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C623	T4A
218	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C624	T4B
219	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C625	T4A
220	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C626	T4B
221	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C631	T2E
222	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C632	T2D
223	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C633	T2C
224	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C636	T2E
225	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C641	T1B
226	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	1	C644	T2D
227	3101051810000	Chip capacitor 0402 180PF J 50V(RoHS)	1	C507	B3G
228	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C102	B5G
229	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C105	B4E
230	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C120	B4H
231	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C126	B4H
232	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C133	B2E
233	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C139	B3E
234	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C141	B2E
235	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C145	B3E
236	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C216	T3D
237	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C219	T3D
238	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C303	T3B
239	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C412	B2D
240	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C413	B3D
241	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C417	B2C
242	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C425	B2B
243	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C427	B2B
244	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C539	B3I
245	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C541	B3H
246	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C546	B2G
247	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C604	B4C
248	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C605	T2E
249	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C608	T4C
250	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C613	T4C
251	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C616	T2G
252	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C617	T4C
253	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C619	T2H
254	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C620	T2H
255	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C640	T4C
256	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C648	T2G
257	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	1	C651	T4D
258	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C310	B4H
259	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C204	T4E
260	3101054720000	Chip capacitor 0402 4700PF K 50V(RoHS)	1	C647	T5E
261	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C138	B2E
262	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C437	B3B
263	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C508	T2G
264	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C510	T2H
265	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C513	T2G
266	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C514	T2H
267	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C540	B3I
268	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C607	T4C

269	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C612	T4C
270	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C635	T2E
271	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C637	T2F
272	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C645	T4B
273	3101051030020	Chip capacitor 0402 0.01UF K 25V(RoHS)	1	C646	T4B
274	3101052230000	Chip capacitor 0402 0.022UF K 16V(RoHS)	1	C642	T4E
275	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C101	T3G
276	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C123	B3F
277	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C127	B5H
278	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C134	B4G
279	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C135	B3E
280	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C146	B2F
281	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C217	B3F
282	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C218	T2D
283	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C304	T2D
284	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C311	T3A
285	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C312	T3A
286	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C313	T3A
287	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C408	T3A
288	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C422	B3F
289	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C436	T2B
290	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C438	B3B
291	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C441	T2A
292	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C520	B2H
293	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C528	B4H
294	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C603	T3H
295	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C536	B2G
296	3101051040060	Chip capacitor 0402 0.1UF K 16V(RoHS)	1	C220	T3D
297	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C118	B4C
298	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C208	B4G
299	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C213	T5D
300	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C215	T4E
301	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C519	B4F
302	3101052240010	Chip capacitor 0402 0.22UF Z 10V(RoHS)	1	C212	T3H
303	3101053340010	Capacitor 0402 0.33UF X5R K 6.3V(RoHS)	1	C301	T4E
304	3101053340010	Capacitor 0402 0.33UF X5R K 6.3V(RoHS)	1	C316	T3A
305	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C203	T3B
306	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C315	T4E
307	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C547	B4H
308	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C627	B3H
309	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C628	T4E
310	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C630	T4E
311	3101051050000	Chip capacitor 0402 1UF K 6.3V(RoHS)	1	C634	T3E
312	3101054730000	Chip capacitor 0402 0.047UF K 10V(RoHS)	1	C207	T4E
313	3101061300000	Chip capacitor 0603 13PF J 50V(RoHS)	1	C419	B2B
314	3101061020000	Chip capacitor 0603 1000PF K 50V (RoHS)	1	C435	B2B
315	3101064730000	Chip capacitor 0603 0.047uF K 16V(RoHS)	1	C116	B2A
316	3101065630000	Chip capacitor 0603 0.056uF K 50V(RoHS)	1	C114	B5E
317	3101064740000	Chip capacitor 0603 0.47UF K 25V (RoHS)	1	C302	B4F
318	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C609	T3B
319	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C610	T4C
320	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C615	T4B
321	3101061050020	Chip capacitor 0603 1UF K 25V (RoHS)	1	C621	T2G
322	3101062250000	Chip capacitor 0603 2.2UF K 10V (RoHS)	1	C618	T2H

323	3104071050070	Tantalum capacitor 0805 1UF M 16V (RoHS)	1	C420	B4G
324	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C128	B2C
325	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C140	B4G
326	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C201	B3E
327	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C206	T2E
328	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C210	T4E
329	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C305	B3F
330	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C442	T3A
331	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C602	T3A
332	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C606	B5B
333	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C643	T5D
334	3104074750070	Tantalum capacitor 0805 4.7UF M 10V(RoHS)	1	C132	B4G
335	3104081550030	Tantalum capacitor 1206 1.5UF M 16V(RoHS)	1	C115	T4C
336	3102992000040	Adjustable capacitor 3.2*2.5*1.25mm (RoHS)	1	TC101	B5E
337	3210305479000	Multi-layer chip inductor 0402 4.7nH (RoHS)	1	L513	B2H
338	3210305120000	Multi-layer chip inductor 0402 12nH (RoHS)	1	L514	B2F
339	3210305120000	Multi-layer chip inductor 0402 12nH (RoHS)	1	L508	B3H
340	3210305150010	Multi-layer chip inductor 0402 15nH (RoHS)	1	L511	B3H
341	3210305150010	Multi-layer chip inductor 0402 15nH (RoHS)	1	L504	B2H
342	3210305220000	Multi-layer chip inductor 0402 22nH (RoHS)	1	L111	B2H
343	3210305220000	Multi-layer chip inductor 0402 22nH (RoHS)	1	L401	B4F
344	3210305220000	Multi-layer chip inductor 0402 22nH (RoHS)	1	L416	B2E
345	3210305270000	Multi-layer chip inductor 0402 27nH (RoHS)	1	L402	B2F
346	3210305330000	Multi-layer chip inductor 0402 33nH (RoHS)	1	L503	B2H
347	3210305390000	Multi-layer chip inductor 0402 39nH (RoHS)	1	L516	T2H
348	3212105470000	Multi-layer chip inductor 0402 47nH HK100547NJ (RoHS	1	L404	B2F
349	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R509	B3F
350	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R510	T2G
351	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R513	T2G
352	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	R514	T2G
353	3210305101000	Multi-layer chip inductor 0402 100nH (RoHS)	1	L505	B3H
354	3210306229000	Multi-layer chip inductor 0603 2.2nH (RoHS)	1	R414	T2G
355	3210306479000	Multi-layer chip inductor 0603 4.7nH (RoHS)	1	L405	B3C
356	3210306479000	Multi-layer chip inductor 0603 4.7nH (RoHS)	1	L408	B2D
357	3213306561000	Multi-layer chip inductor 0603 0.56uH(RoHS)	1	L411	B3D
358	3213306102000	Multi-layer chip inductor 0603 1uH MLF160 (RoHS)	1	L110	B2B
359	3213306102000	Multi-layer chip inductor 0603 1uH MLF160 (RoHS)	1	L201	B4G
360	3213306222000	Multi-layer chip inductor 0603 2.2uH MLF1 (RoHS)	1	L509	T4D
361	3213306332000	Multi-layer chip inductor 0603 3.3uH MLF1 (RoHS)	1	L102	B3H
362	3213306332000	Multi-layer chip inductor 0603 3.3uH MLF1 (RoHS)	1	L103	B4E
363	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L101	B4E
364	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L106	B4E
365	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L107	B2E
366	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L108	B4H
367	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L109	B4G
368	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L417	B4H
369	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L602	B2E
370	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L603	T2E
371	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L605	T3D
372	3221506601000	Chip ferrite bead 0603 600Ω±25% (RoHS)	1	L606	T4E
373	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L410	T4E
374	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L601	T4B
375	3221507600000	Chip ferrite bead 0805 60Ω±25%(RoHS)	1	L607	T4B
376	3221507221000	Chip ferrite bead 0805 220Ω±25%(RoHS)	1	L407	T3B

377	3231301250000	Air-core inductor E2-0.30*1.2*5TL(RoHS)	1	L406	B3D
378	3210108230010	Bobbin inductor 1206 23nH LQW31(RoHS)	1	L104	B3D
379	3210209102010	Bobbin inductor 1210 1uH LQH32M(RoHS)	1	L415	B3E
380	3231351630000	Air-core inductor E2-0.35*1.6*3TR (RoHS)	1	L501	B2A
381	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L412	B2B
382	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L413	B3A
383	3231351640000	Air-core inductor E2-0.35*1.6*4TL(RoHS)	1	L414	B3A
384	3231351650000	Air-core inductor E2-0.35*1.6*5TL(RoHS)	1	L409	B3A
385	3304060300050	Varactor HVC350BTRF-E(RoHS)	1	D101	B3B
386	3304060300050	Varactor HVC350BTRF-E(RoHS)	1	D102	B4E
387	3304040200000	Varactor BB179 SOD523(RoHS)	1	D103	B4E
388	3303020100020	Switching diode MA2S11100L SS-mini(RoHS)	1	D104	B3E
389	3303030800040	Switching diode 1SS356 SOD-323 35V 100mA(RoHS)	1	D401	B3E
390	3303030800040	Switching diode 1SS356 SOD-323 35V 100mA(RoHS)	1	D501	B2B
391	3303060300010	Switching diode HVC131TRF-E (RoHS)(RoHS)	1	D105	B2B
392	3303060300010	Switching diode HVC131TRF-E (RoHS)(RoHS)	1	D502	B3E
393	3303060300010	Switching diode HVC131TRF-E (RoHS)(RoHS)	1	D503	B1F
394	3303060300010	Switching diode HVC131TRF-E (RoHS)(RoHS)	1	D504	B1H
395	3303060300010	Switching diode HVC131TRF-E (RoHS)(RoHS)	1	D505	B2H
396	3307110100080	【wetproof】LED KPT-1608SGC(RoHS)	1	D601	B1H
397	3307110100080	【wetproof】LED KPT-1608SGC(RoHS)	1	D603	T4A
398	3307110100060	【wetproof】LED KPT-1608SURC(RoHS)	1	D602	B5A
399	3307110100060	【wetproof】LED KPT-1608SURC(RoHS)	1	D604	T4A
400	3309030600000	Noise-clipping diode RSA6.1EN(RoHS)	1	D605	B5A
401	3309030600000	Noise-clipping diode RSA6.1EN(RoHS)	1	D606	T4B
402	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D607	T4D
403	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D608	B4C
404	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D610	B4D
405	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D506	T4H
406	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D301	T3A
407	3399990000080	Zener diode EDZTE616.8B SO(RoHS)	1	D402	B2D
408	3411002000020	Transistor 2SC5343EG (RoHS)	1	Q101	T5D
409	3404002000000	Transistor PRF957 (RoHS)	1	Q102	B2E
410	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q103	B3F
411	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q405	B2F
412	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q501	T2B
413	3403008000010	Transistor DTC114EE(TL) (RoHS)	1	Q604	T2G
414	3401002000990	Transistor 2SC5108-Y(TE85L(RoHS)	1	Q104	T2G
415	3401002000990	Transistor 2SC5108-Y(TE85L(RoHS)	1	Q504	B4F
416	3401001000490	Transistor 2SA1832-GR(TE85L(RoHS)	1	Q201	B3H
417	3418001000010	Transistor AT-41511-TR1G (RoHS)	1	Q503	B2H
418	3503020000030	Field Effect Transistor(FET) 2SK1824-T1-A(RoHS)	1	Q202	T3D
419	3408002000030	Transistor 2SC4226-R24-A(RoHS)	1	Q401	T2D
420	3408002000030	Transistor 2SC4226-R24-A(RoHS)	1	Q505	B2F
421	3502010000130	Field Effect Transistor 2SK3078(TE12L(RoHS)	1	Q402	B3H
422	3515990000000	Field Effect Transistor RQA0002DNSTB-E(RoHS)	1	Q403	B3D
423	3403007000020	Transistor DTA114YE(TL) (RoHS)	1	Q404	B3C
424	3403007000020	Transistor DTA114YE(TL) (RoHS)	1	Q502	T2B
425	3410001000020	Transistor 2SA1745 (RoHS)	1	Q601	B2G
426	3410001000020	Transistor 2SA1745 (RoHS)	1	Q602	T2G
427	4301080000020	Momentary contact switch(RoHS)	1	SW601	T2H
428	4301080000090	Momentary contact switch (2.55N)(RoHS)	1	SW604	T3A
429	4301080000090	Momentary contact switch (2.55N)(RoHS)	1	SW605	T1B
430	5205005000020	MINI USB port 5P(RoHS)	1	J201	T1D

431	5205006000010	Accessory jack LGK1503(RoHS)	1	J202	B4D
432	3602999000000	Audio amplification IC AP4890 BTL 1W(RoHS)	1	U301	B4C
433	3605008005070	Operational Amplifier, dual-operation J(RoHS)	1	U401	T3A
434	41003201001B0	RF PCB (RoHS)(RoHS)	1	U501	T2B
435	3610999000060	SCM SRT3210 100Pin H(RoHS)	1	U601	B3G
436	3609049000010	IC LDO regulator RT9011PP 3.(RoHS)	1	U602	T3F
437	3612031000510	Memory AT24C16AN-10SU-2(RoHS)	1	U603	T4C
438	3615042000010	【wetproof】Charge management IC(RoHS)	1	U604	T4D
439	3609006000000	Reset IC R3112Q271A-TR-F (RoHS)	1	U605	T4D
440	3701212540030	Temperature Compensated Crystal Oscillator (RoHS)	1	XT101	T5E
441	41003203000G0	PCB board FR4 4L 4P (RoHS)	1	PCB	B4G
442	6201648000000	VCO shielding mask 0.30mm (RoHS)	1		
443	6201651000000	Filter shielding mask 0.20mm 00 (RoHS)	1		
444	7000183000000	Heat-sinking device 3*5mm 00 (RoHS)	1		

TC-320 (450-470MHZ) Parts Change Record

TC-320 (450-470MHz) Parts Change Record										
Before Change (TC-320 VF)						After Change (TC-320 VG)				
No.	Part No.	Description	Ref No.	Print No.	Qty.	Part No.	Description	Ref No.	Print No.	Qty.
1	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	C517	B2H	1	3101052200010	Chip capacitor 0402 22PF J 50V(RoHS)	C517	B2H	1
2	None	None	L503	B2H	0	3210305330000	Multi-layer chip inductor 33nH LQG15HS33NJ02（RoHS）	L503	B2H	1
3	None	None	R528	B2G	0	3001051230000	Chip resister 0402 12KΩ J 1/16W(RoHS)	R528	B2G	1
4	None	None	R529	B2G	0	3001056820000	Chip resister 0402 6.8KΩ J 1/16W(RoHS)	R529	B2G	1
5	None	None	C523	B2H	0	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	C523	B2H	1
6	3001051000020	Chip resister 0402 10Ω F 1/16W (RoHS)	R525	B2G	1	3001054720000	Chip resister 0402 4.7KΩ J 1/16W(RoHS)	R525	B2G	1
7	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	C507	B3G	1	3101051810000	Chip capacitor 0402 180PF J 50V(RoHS)	C507	B3G	1
8	3210305150010	Multi-layer chip inductor 15nH LQG15HS15NJ02(RoHS)	L505	B3H	1	3210305101000	Multi-layer chip inductor 100nH LQG15HSR10J02（RoHS）	L505	B3H	1
9	None	None	Q503	B2H	0	3418001000010	Transistor AT-41511-TR1G (RoHS)	Q503	B2H	1
10	3001056830000	Chip resister 0402 68KΩ J 1/16W(RoHS)	R527	B2H	1	3001050000000	Chip resister 0402 0Ω J 1/16W (RoHS)	R527	B2H	1
11	None	None	C530	T2H	0	3101051500020	Chip capacitor 0402 15PF J 50V(RoHS)	C530	T2H	1

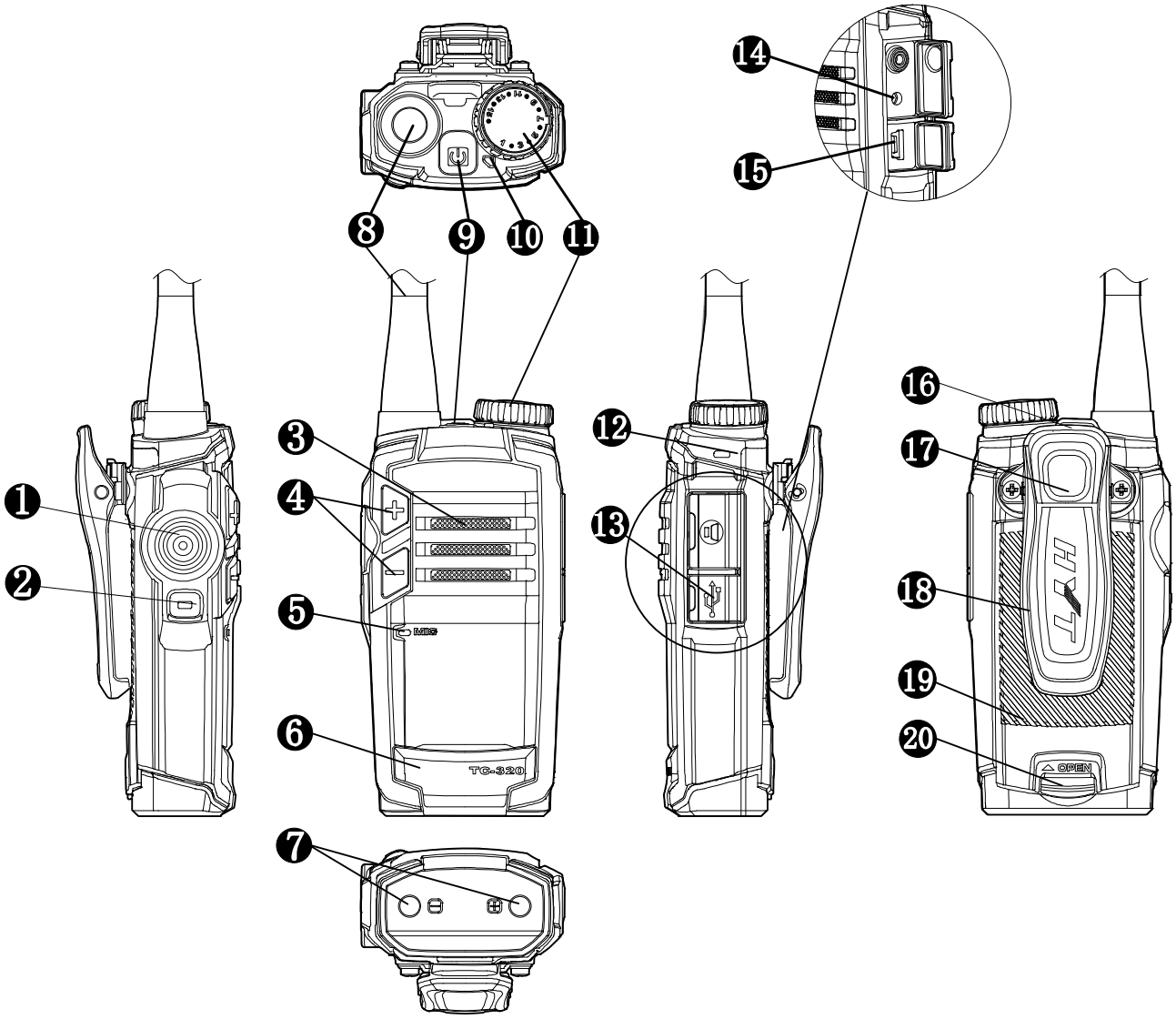
12	None	None	L516	T2H	0	3210305390000	Multi-layer chip inductor 39nH LQG15HS39NJ02（RoHS）	L516	T2H	1
13	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	C525	T2H	1	None	None	C525	T2H	0
14	None	None	C527	T2H	0	3101050100030	Chip capacitor 0402 1PF B 50V(RoHS)	C527	T2H	1
15	None	None	C536	B2G	0	3101051040060	Chip capacitor 0402 0.1UF K 16W(RoHS)	C536	B2G	1
16	3001052210000	Chip resister 0402 220Ω J 1/16W(RoHS)	R526	B3G	1	3001058200000	Chip resister 0402 82Ω F 1/16W(RoHS)	R526	B3G	1
17	None	None	R530	B2G	0	3001051000020	Chip resister 0402 10Ω F 1/16W	R530	B2G	1
18	None	None	R634	B5A	0	3001064710000	Chip resister 0603 470Ω J 1/10W(RoHS)	R634	B5A	1
19	None	None	R609	B5A	0	3001064710000	Chip resister 0603 470Ω J 1/10W(RoHS)	R609	B5A	1
20	None	None	C651	T4D	0	3101051020010	Chip capacitor 0402 1000PF K 50V(RoHS)	C651	T4D	1
21	None	None	C220	T3D	0	3101051040060	Chip capacitor 0402 0.1UF K 16W(RoHS)	C220	T3D	1
22	None	None	L607	T4B	0	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	L607	T4B	1
23	None	None	R606	T4C	0	3001058220000	Chip resister 0402 8.2KΩ J 1/16W(RoHS)	R606	T4C	1
24	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	C512	B1E	1	3101051010030	Chip capacitor 0402 100PF J 50V(RoHS)	C512	B2B	1
25	3303060300010	Switching diode HVC131TRF-E (RoHS)	D504	B2H	1	3303060300010	Switching diode HVC131TRF-E (RoHS)	D504	B1H	1
26	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	L601	T3B	1	3221507600000	Chip ferrite bead 0805 60Ω±25%(100MHz)(RoHS)	l601	T4B	1

27	41003203000F0	TC-320 main PCB FR4 1.2T/4L/4P F (RoHS)			1	41003203000G0	PCB board TC-320 FR4 4L (RoHS)			1
28	41003001001A0	TC-310/320 RF PCB(RoHS)			1	41003201001B0	TC-320 RF PCB (RoHS)	U501	T2B	1
29	3101054710010	Chip capacitor 0402 470PF K 50V(RoHS)	C543	B3I	1	None	None	C543	B3I	0
30	3401002000790	Transistor 2SC5065-O(TE85L.F)(RoHS)	Q506	B2G	1	None	None	Q506	B2G	0
31	3210305180000	Multi-layer chip inductor 0402 18nH LQG15HS18NJ02(RoHS)	L506	B2H	1	None	None	L506	B2H	0
32	3001051020000	Chip resister 0402 1KΩ F 1/16W (RoHS)	R504	B2H	1	None	None	R504	B2H	0
33	3101051040060	Chip capacitor GRM155R71C104KA88D 0.1UF K 16V(RoHS)	C518	B2H	1	None	None	C518	B2H	0
34	3001055610000	Chip resister 0402 560Ω J 1/16W(RoHS)	R503	T2G	1	None	None	R503	T2G	0
35	3101051020010	Chip capacitor GRM36X7R102K50PT 1000PF K 50V(RoHS)	C521	T2G	1	None	None	C521	T2G	0
36	3001080000000	Chip resister 1206 0Ω J 1/4W(RoHS)	C314	T4A	1	None	None	C314	T4A	0
37	3615999000000	Charging IC CN3062 SOP8 Li-ion (RoHS)	U604	T4D	1	3615042000010	Charge management IC MC34673AEP(RoHS)	U604	T4D	1
38	3210305479000	Multi-layer chip inductor 4.7nH LQG15HS4N7S02（RoHS）	L504	B2H	1	3210305150010	Multi-layer chip inductor 15nH LQG15HS15NJ02(RoHS)	L504	B2H	1
39	3101053690000	Chip capacitor 0402 3.6PF B 50V (RoHS)	C421	B3B	1	3101050400010	Chip capacitor 0402 4PF B 50V(RoHS)	C421	B3B	1
40	3101061600000	Chip capacitor 0603 16PF J 50V (RoHS)	C419	B2B	1	3101061300000	Chip capacitor 0603 13PF J 50V(RoHS)	C419	B2B	1

41	3001051000020	Chip resister 0402 10Ω F 1/16W (RoHS)	R526	B3G	1	3001058200000	Chip resister 0402 82Ω F 1/16W(RoHS)	R526	B3G	1
42	3104071050070	Tantalum capacitor 0805 1UF M 16V (RoHS)	C132	B4G	1	3104074750070	Tantalum capacitor 4.7UF M 10V P(RoHS)	C132	B4G	1
43	3210305150010	Multi-layer chip inductor 0402 15nH LQG15 (RoHS)	L508	B3H	1	3210305120000	Multi-layer chip inductor 0402 12nH LQG15HS(RoHS)	L508	B3H	1

Adjustment Description

Parts Overview



(1)PTT (Push-to-Talk) Key	(2) SK (programmable key)	(3) Speaker	(4) Volume Control Keys [+] / [-]
(5) Microphone	(6) Nameplate	(7) Charging Terminal	(8) Antenna
(9) Power On/Off Key	(10) Channel/Status Indicator	(11)Channel Selector Knob	(12) Charge Indicator
(13) Accessory Jack Cover	(14) Audio Accessory Jack	(15) MINI USB Jack	(16) Strap Hole
(17) Screw of Belt Clip	(18) Belt Clip	(19) Rear Cover	(20) Battery Latch

Required Test Instruments:

Radio communication test set	1 set
10V/3A regulated DC power supply	1 set
Digital voltmeter	1 set
Ammeter	1 set

Preparations:

Place the board to be tested on the test fixture (please ensure good connection between each test point and the fixture), and connect the board to a power supply with DC voltage of 3.8V.

Wired Clone

1. Instructions:

(1) Connect two radios with a cloning cable and power on the source radio while holding down SK on it. The radio will enter Wired Clone mode in 2 seconds. Then power on the target radio to enter normal mode;

(2) In Wired Clone mode, press SK on the source radio to switch between User Clone mode and Factory Clone mode (check Factory Clone mode when programming, or you will fail to switch.);

(3) Press PTT key to clone data to the target radio. You can clone the data to multiple target radios in the same way.

2. LED Indications:

(1) During the cloning process, LED solidly glows red; once it finishes, LED will solidly glow green.

(2) Clone errors:

a. User clone. Once clone begins, frequency band and Model ID will be checked. LED glows orange for 2 seconds and then goes out to indicate a failed check. If the check is successfully carried out but error data clone occurs, LED will flash orange. In this situation, press any key other than the Power On/Off Key to turn it off.

b. Factory clone. If error data clone occurs, LED will flash orange. In this situation, press any key other than the Power On/Off Key to turn it off. Repress PTT to initiate a new clone process.

(3) Target radio status: LED solidly glows green during the cloning process and goes out once it finishes.

3. Difference between Factory Clone Mode and User Clone Mode:

(1) User Clone Mode: Only clone the data of user mode. Test parameters like adjustment frequency, adjustment items and base band parameter will not be cloned.

(2) Factory Clone Mode: Clone all the data excluding serial No.

4. Instructions:

(1) Error will occur when data is cloned without cable connection. Please refer to 2-(2).

(2) Error may occur during test data clone in Factory Clone mode if you wrongly press the side key and switch into User Clone mode (LED flashes red once).

(3) If battery of the source radio runs low in clone mode, red LED will flash and low battery alert will be given as well.

Adjustment

1. Description of Adjustment Procedures:

(1) Simultaneously hold down **PTT**, **SK** and **Power On/Off** Key for more than 4s to enter adjustment mode (orange LED flashes). After the keys are released, the radio will enter the adjustment item in this mode (the item entered depends on the position where the **Channel Selector** Knob locates). And LED will flash red or green according to the Rx and Tx status of the adjustment item.

(2) Or connect the programming cable to the radio for real-time adjustment in PC mode.

2. Description of Adjustment Items:

(1) Wide/Narrow Bandwidth Switch and Frequency Switch in an Adjustment Item:

In an adjustment item, short press **SK** to switch between wide and narrow bandwidth. The default adjustment point is the 1st frequency (low frequency) of current bandwidth. After selecting a bandwidth, short press (no longer than 1s) **PTT** to switch among different frequencies.

(2) Adjustment Items Include:

Tx Items:

Tx Frequency Tolerance and VCO Lock Voltage.

Note: These items are adjusted outside the adjustment mode via hardware.

Tx Low Power, Tx High Power, CDCSS Wave, CDCSS Deviation, CTCSS Deviation (low), CTCSS Deviation (medium), CTCSS Deviation (high), Tx Low Voltage Threshold and Max. Deviation. Note: These items are adjusted inside the adjustment mode via software.

Rx Items:

VCO Lock Voltage (outside the mode), Squelch and Rx Low Voltage Threshold.

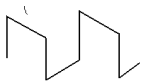
3. Specific Operations and Requirements:

(1) Conventional Adjustment Items (outside the adjustment mode): Tx Frequency Tolerance, VCO Lock Voltage.

(Note: The configuration file has preset CH1, CH2 and CH3 as wide bandwidth with low, medium and high frequency respectively and CH4, CH5 and CH6 as narrow bandwidth with low, medium and high frequency respectively. Make sure the antenna or load is connected before adjustment.)

Item	Condition	Test		Adjustment		Specifications / Remarks
		Test Instrument	Test point	Part	Method	
Tx Frequency Tolerance	Rotate the Channel Selector Knob to CH1 and press **PTT** to transmit.	Communication Test Set	Antenna	VR101	Adjust VR101 with ceramic tuning tool to control the center frequency within the error range.	≤150Hz
VCO Tx Lock Voltage	Rotate the Channel Selector Knob to CH3 and press **PTT** to transmit.	Digital Voltmeter	CV	TC101	Adjust TC101 with ceramic tuning tool until the lock voltage meets the requirements.	1.9V-2.3V
	Rotate the Channel Selector Knob to CH1 and press **PTT** to transmit.				Check	≥0.5V
VCO Rx Lock Voltage	Rotate the Channel Selector Knob to CH3.			TC101	Check	1.9V-2.3V
	Rotate the Channel Selector Knob to CH1.				Check	≥0.5V

(2) Adjustment in the Adjustment Mode (Note: Make sure the antenna or load is connected before adjustment; rotate the Channel Selector knob to save the adjusted values automatically).

Item	Condition		Test		Adjustment		Specifications / Remarks
			Test Instrument	Test point	Part	Method	
Tx Power	High Power	Rotate the Channel Selector Knob to CH2 and select low frequency.	Communication Test Set/ Ammeter	Antenna Connector		Press **[+]** or **[-]** key to adjust the output power, and rotate the Channel Selector Knob to save it.	1.8-2.2W I≤1.4A
		Short press **PTT** key to switch between different frequencies (low, medium and high)					
	Low Power	Rotate the Channel Selector Knob to CH1 and select low frequency.				Press **[+]** or **[-]** key to adjust the output power, and rotate the Channel Selector Knob to save it.	0.5W±0.2W I≤0.8A
		Short press **PTT** key to switch between different frequencies (low, medium and high)					
CDCSS Waveform		Rotate the Channel Selector Knob to CH3 and “wide bandwidth” and “low frequency” are selected.	Communication Test Set BPF:<20Hz~300Hz	Antenna	VR601	Adjust the waveform to make it similar to square waveform.	
		Short press **PTT** key to switch among different frequencies circularly; long press **PTT** key to switch between wide/narrow bandwidth					
CDCSS Deviation	Wide Bandwidth	Rotate the Channel Selector Knob to CH4 and “wide bandwidth” and “low frequency” are selected.				Press **[+]** or **[-]** key to make adjustments until the CDCSS deviation meets the requirements.	500-900Hz
		Press **PTT** key to switch between different frequencies (low, medium and high)					

	Narrow Bandwidth	Short press **SK** key to enter the "narrow bandwidth" and select low frequency. Press **PTT** key to switch between different frequencies (low, medium and high)				Press **[+]** or **[-]** key to make adjustments until the CDCSS deviation meets the requirements.	300-500Hz
CTCSS Deviation	Wide Bandwidth	Rotate the Channel Selector Knob to CH5, CH6 and CH7 with CTCSS respectively corresponding to: low, medium and high frequencies. Short press **PTT** key to switch between different CTCSS frequencies on each channel.	Communication Test Set :<20Hz~300Hz	Antenna		Use **[+]** or **[-]** key to make slight adjustments until the CTCSS deviation meets the requirements.	500-900Hz
	Narrow Bandwidth	On CH5, CH6 and CH7, short press SK key to enter "narrow bandwidth", and short press **PTT** key to switch between different frequencies.				Use **[+]** or **[-]** key to make slight adjustments until the CDCSS deviation meets the requirements.	300-500Hz
Max. deviation	Wide Bandwidth	Rotate the Channel Selector Knob to CH9; Short press **SK** key to switch to "narrow band".	Communication Test Set BPF:<20Hz~15kHz AF:1kHz 120mV	Antenna Earpiece Socket		Use **[+]** or **[-]** key to ensure that the specifications meet the requirements.Rotate the Channel Selector Knob to save the value after wide/narrow bandwidth adjustment.	3.7-4.3KHz
	Narrow Bandwidth						1.7-2.3KHz

Modulation Sensitivity	Wide Bandwidth	Rotate the Channel Selector Knob to CH9; Short press **SK** key to switch to "narrow band".	Communication Test Set BPF: <20Hz~15kHz AF:1kHz 3±3mV			Check	3.0KHz
	Narrow Bandwidth						1.5KHz
TX Low Voltage Threshold	Rotate the Channel Selector Knob to CH8.		Digital Voltmeter	Power Supply Port	Power Supply	Adjust output voltage of the power supply to 3.5V, and press **[+]** or **[-]** key to sample the current value.	Aler tone will be given with red LED flashing when TX voltage is ≤3.5V.

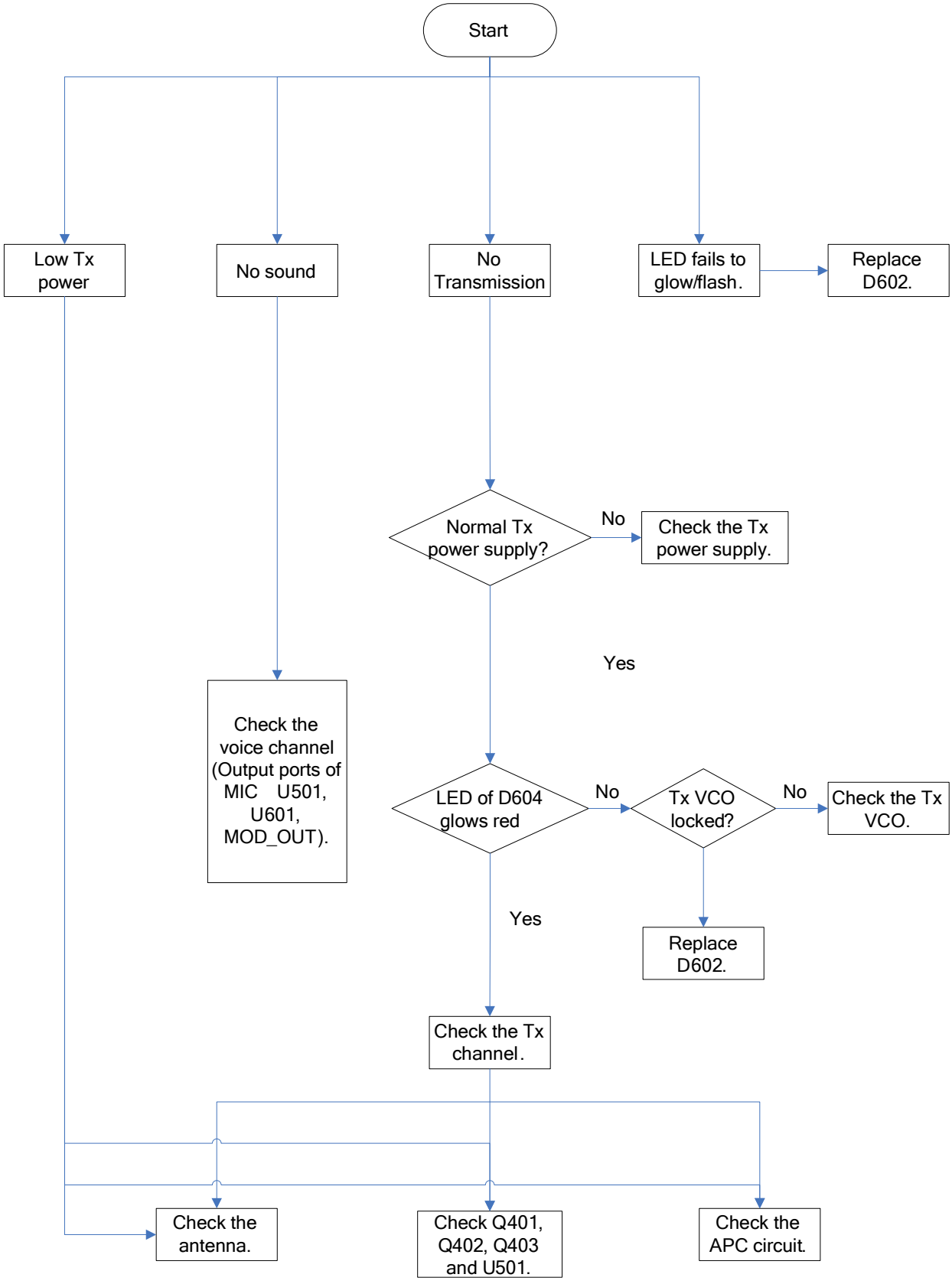
(3) Rx Circuit Adjustment

Items		Condition	Test Instrument	Part		Method	Specifications / Remarks
Squelch On	Wide Bandwidth	Rotate the Channel Selector Knob to CH10 and SQL level 5 ON is set. Press **[+]** or **[-]** key to sample current value. At this time, wide bandwidth and low frequency are selected. Short press **PTT** key to switch the frequency.	Communication Test Set SSG:-119dBm MOD:1KHz DEV:3KHz Filter: 0.3-3KHz	Antenna Earpiece Socket		Adjust the output signals of SSG to the squelch level. Rotate the Channel Selector Knob to save the value after three-point adjustment.	Squelch level (Level 5) -121dB
	Narrow Bandwidth	Short press **SK** to enter "narrow band". Press **[+]** key to adjust squelch level. Short press **PTT** key to switch the frequency.	Communication Test Set SSG:-118dBm MOD:1KHz DEV:1.5KHz Filter: 0.3-3KHz			Same as above	Squelch level (Level 5) -120dB
Squelch Off	Wide Bandwidth	Rotate the Channel Selector knob to CH11 and SQL level 5 OFF is set. Press **[+]** or **[-]** key to sample current value. At this time, wide bandwidth and low frequency are selected Short press **PTT** to switch the frequency.	Communication Test Set SSG:-121dBm MOD:1KHz DEV: 3KHz Filter: 0.3-3KHz	Antenna Earpiece Socket		Adjust the output signals of SSG to the squelch level. Rotate the Channel Selector Knob to save the value after three-point adjustment.	Squelch level (Level 5) -122dB

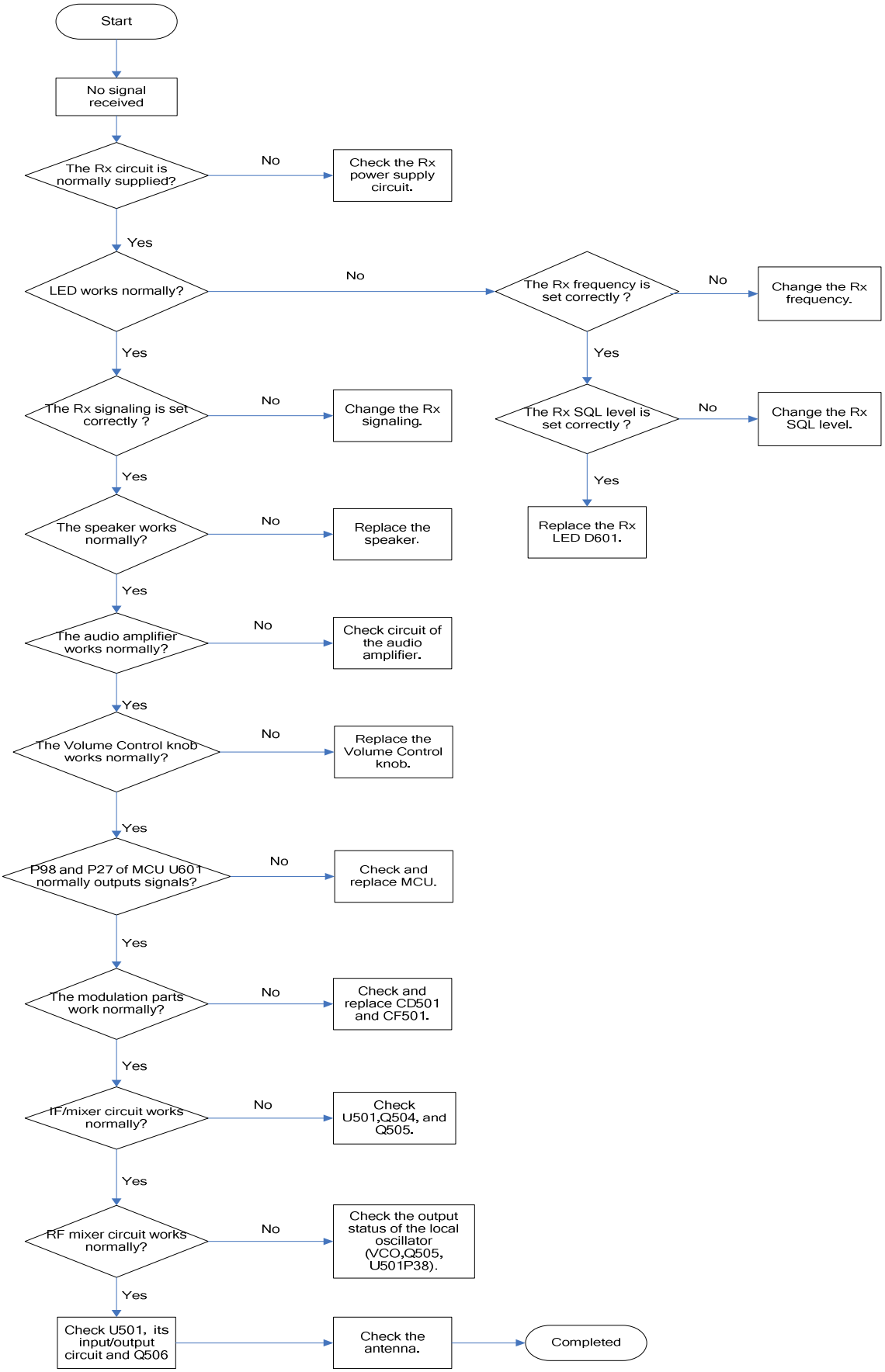
	Narrow Bandwidth	Short press **SK** to enter "narrow band"; press **[+]** or **[-]** key to sample the current value; press **PTT** to switch the frequency.	Communication test set SSG:-120dBm MOD:1KHz DEV:1.5KHz Filter: 0.3-3KHz			Same as above	Squelch level (Level 5) -121dB
RX Low Voltage Threshold	Rotate the Channel Selector knob to CH12.		Digital Voltmeter	Power Supply Port	Power Supply	Adjust output voltage of the power supply to 3.7V, and press **[+]** or **[-]** key to sample the current value.	Aler tone will be given with red LED flashing when TX voltage is ≤3.7V.
Sensitivity	Wide Bandwidth	High, medimum, low frequency out of the mode	Communication Test Set SSG:-121dBm MOD:1KHz DEV: 3KHz Filter: 0.3-3KHz	Antenna Earpiece Socket		Check	-119dBm or above
	Narrow Bandwidth	High, medimum, low frequency out of the mode	Communication Test Set SSG:-120dBm MOD:1KHz DEV: 1.5KHz Filter: 0.3-3KHz				-118dBm or above

Troubleshooting Flow Chart

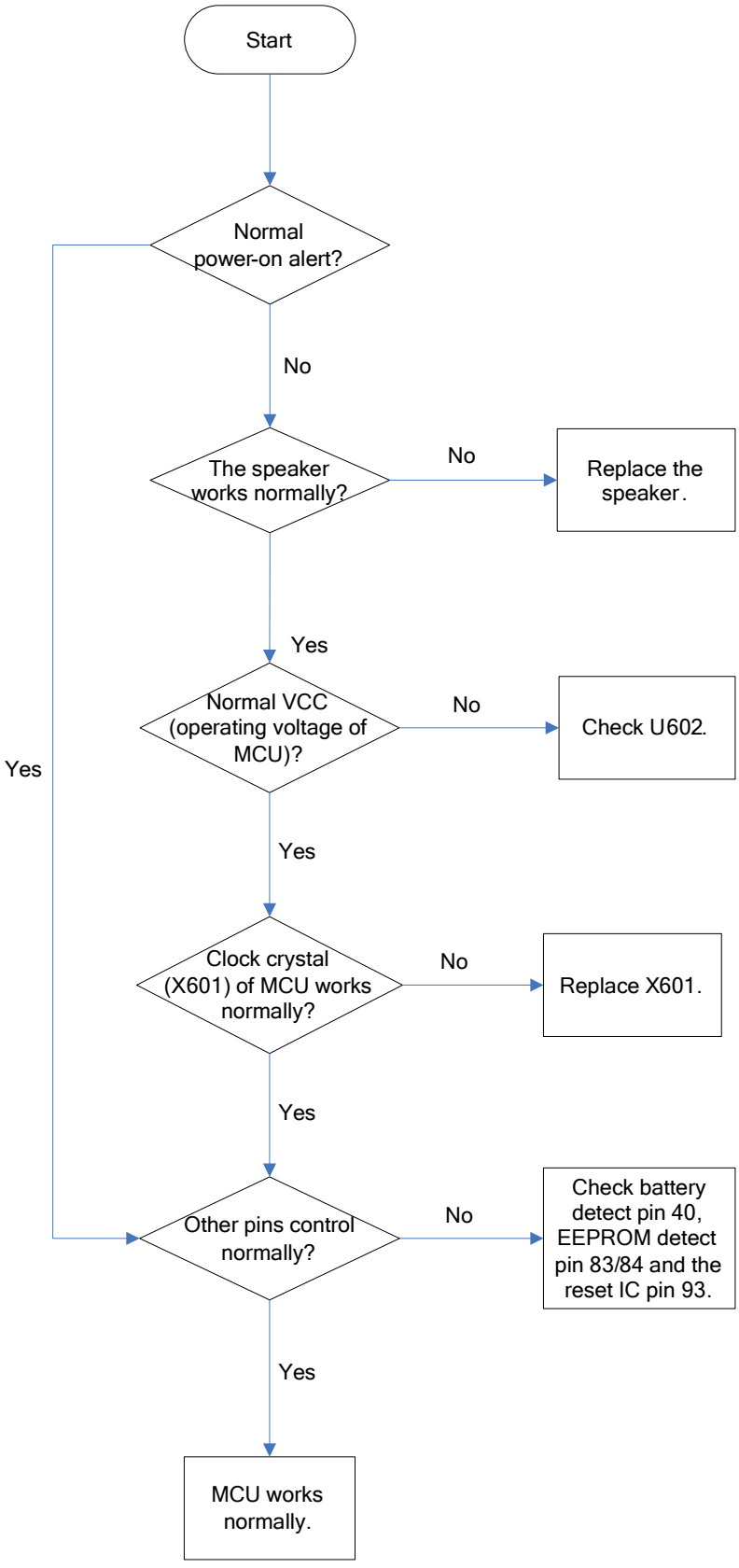
Transmit Circuit



Receive Circuit



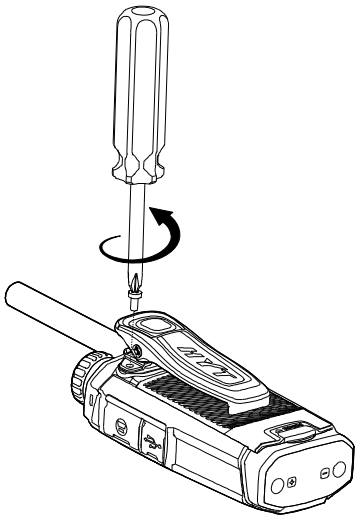
MCU


Start
Normal power-on alert?
No
The speaker works normally?
No
Replace the speaker.
Yes
Normal VCC (operating voltage of MCU)?
No
Check U602.
Yes
Clock crystal (X601) of MCU works normally?
No
Replace X601.
Yes
Other pins control normally?
No
Check battery detect pin 40, EEPROM detect pin 83/84 and the reset IC pin 93.
Yes
MCU works normally.
Yes

Disassembly and Assembly

Disassembly

1. Power off the radio;
2. Remove the belt clip.

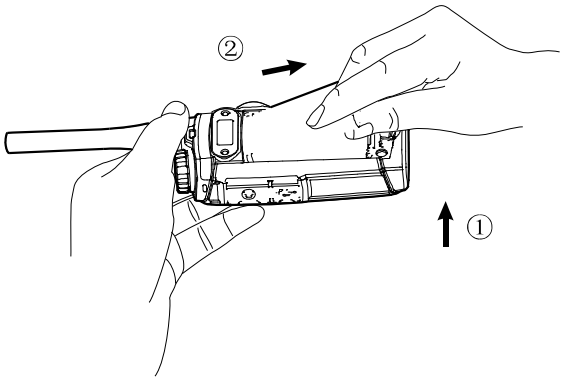


3. Remove the battery

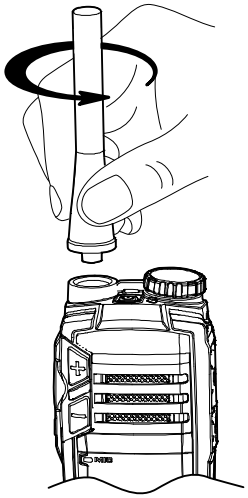
a. Push the battery latch upwards;

b. Remove the rear cover;

c. Take out the batter by lifting its bottom side.



4. Remove the antenna



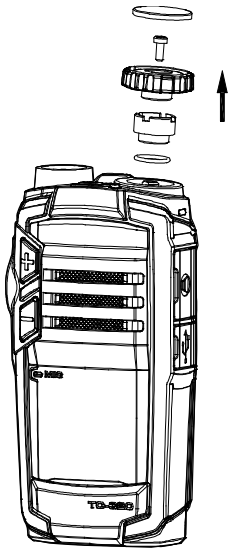
5. Remove the Channel Selector Knob, nut and waterproof ring

a. Deattach the Channel Selector Knob Cover;

b. Unfasten the screw;

c. Remove Channel Selector Knob;

d. Remove the nut and waterproof ring.

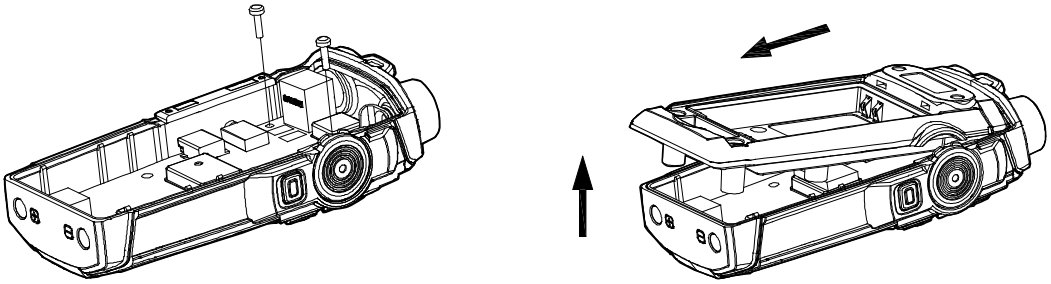


6. Disassemble chassis of the radio

a. Unfasten the 4 screws on the chassis;

b. Lift the bottom of the chassis;

c. Pull the chassis out.

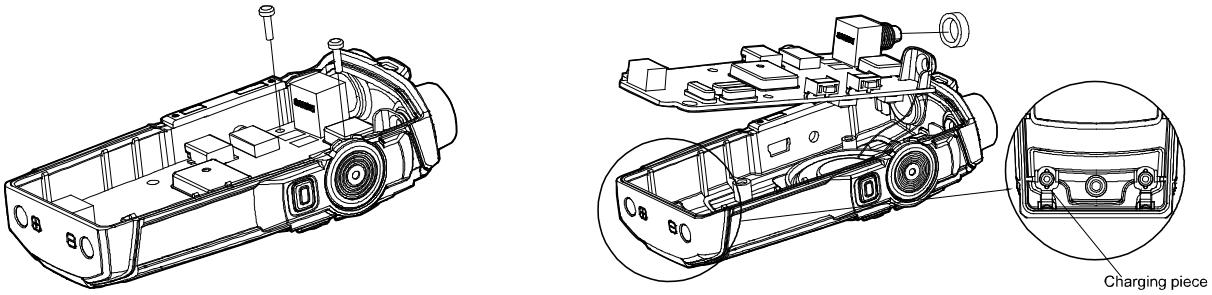


7. Disassemble the main PCB

a. Remove the two fixing screws on the PCB;

b. Remove the PCB and supporting ring of the Channel Selector Knob.

Note: Take care of the speaker cable and the charging piece at the bottom.



Assembly

1. Install the main PCB

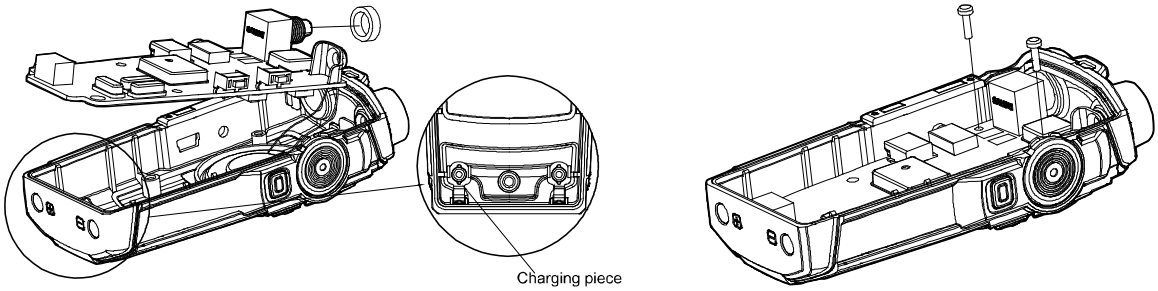
a. Make sure that the speaker is well connected, and the charging piece on the bottom is correctly installed;

b. Install the supporting ring of the Channel Selector Knob;

c. Attach the main PCB;

d. Attach and secure two screws (take care to control the torsion force within 0.8-1.2kgf);

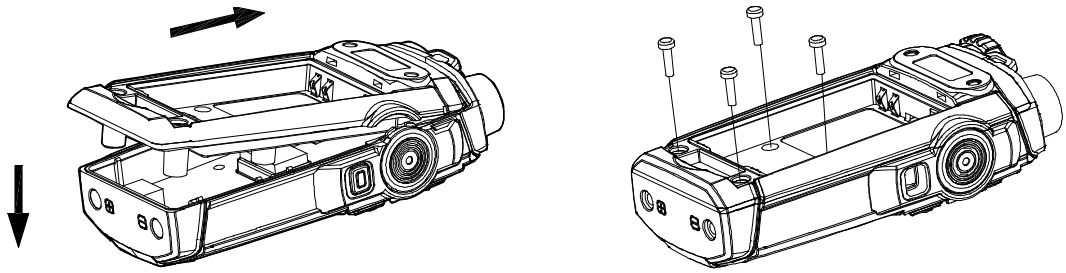
Note: don't damage the speaker cable during installation.



2. Assemble the chassis

a. Attach the chassis of radio;

b. Attach and secure the four fixing screws (take care to control torsion force within 1.2-1.5kgf).



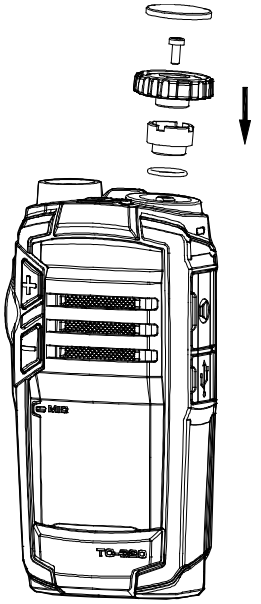
3. Assemble the nuts and Channel Selector Knob on the top

a. Attach and secure the nuts on the top of the radio (with a waterproof ring);

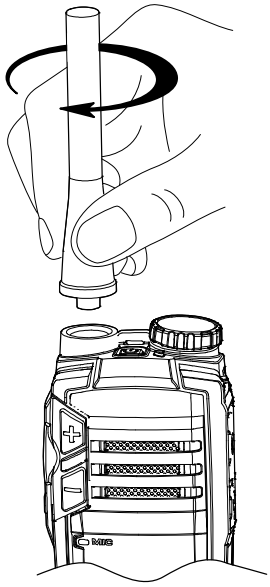
b. Attach the Channel Selector Knob;

c. Attach and secure the fixing screws;

d. Attach and secure the Channel Selector Knob Cover.



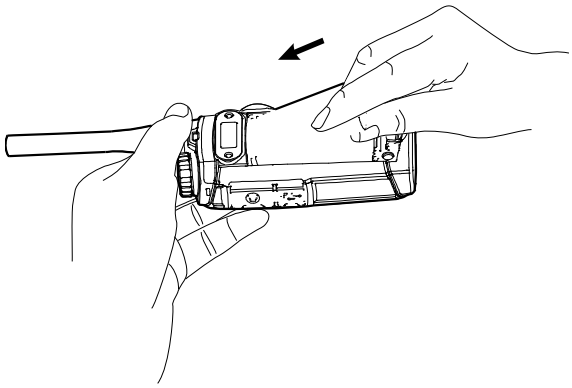
4. Assemble the antenna

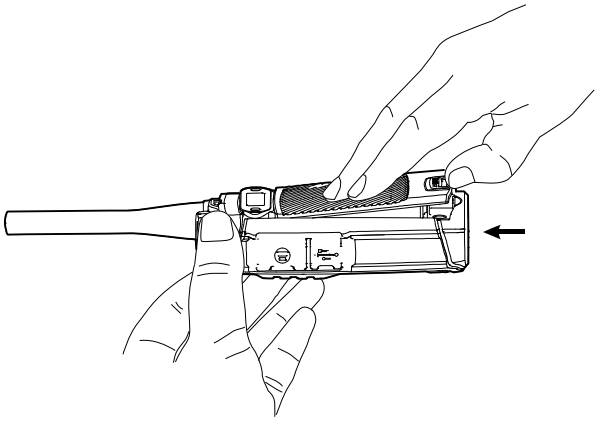


5. Attach the battery

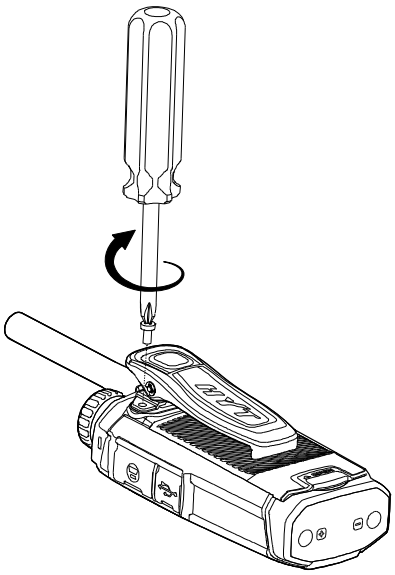
a. Insert the battery

b. Attach the rear cover.

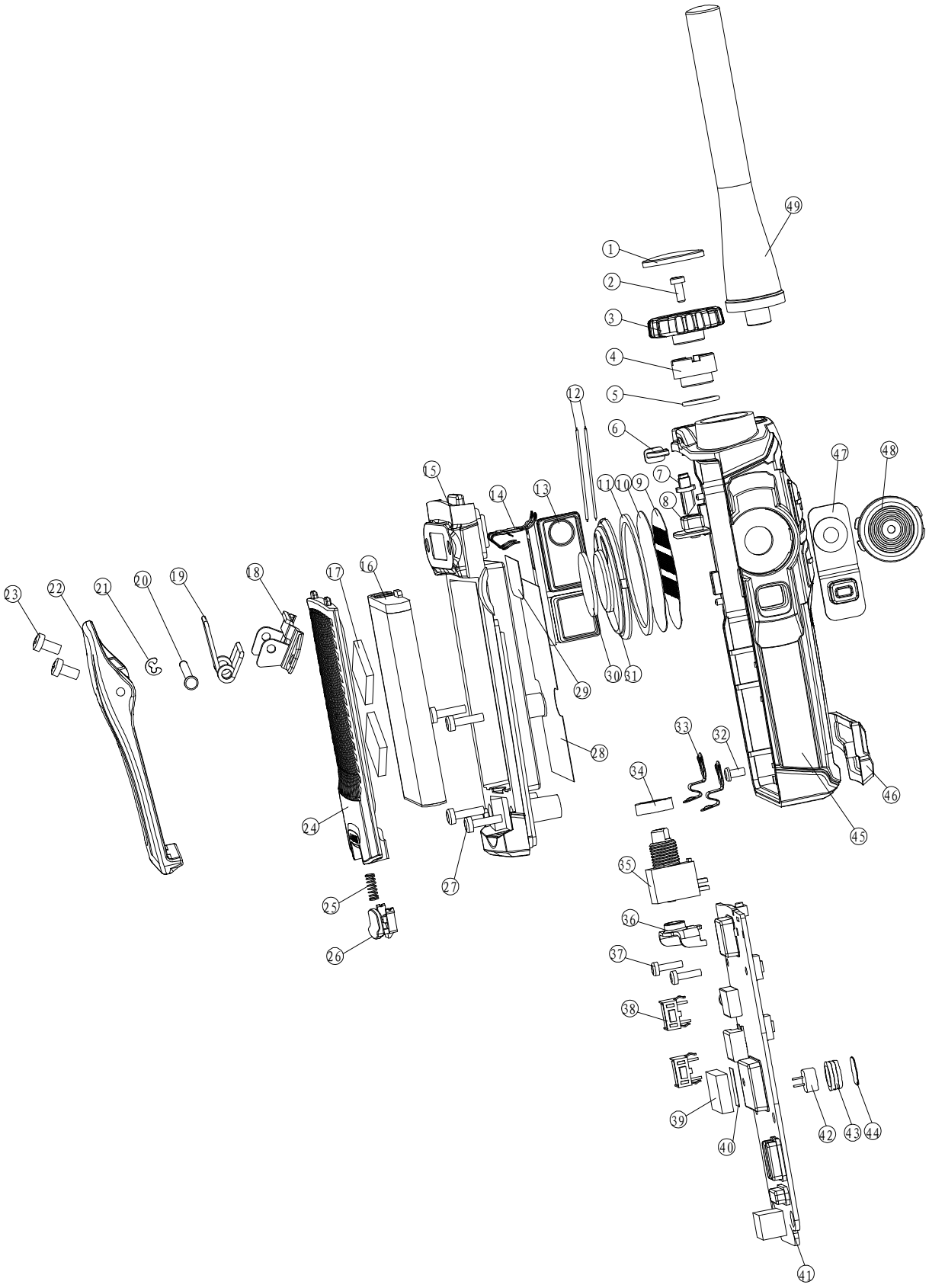




6. Attach the belt clip



Exploded View



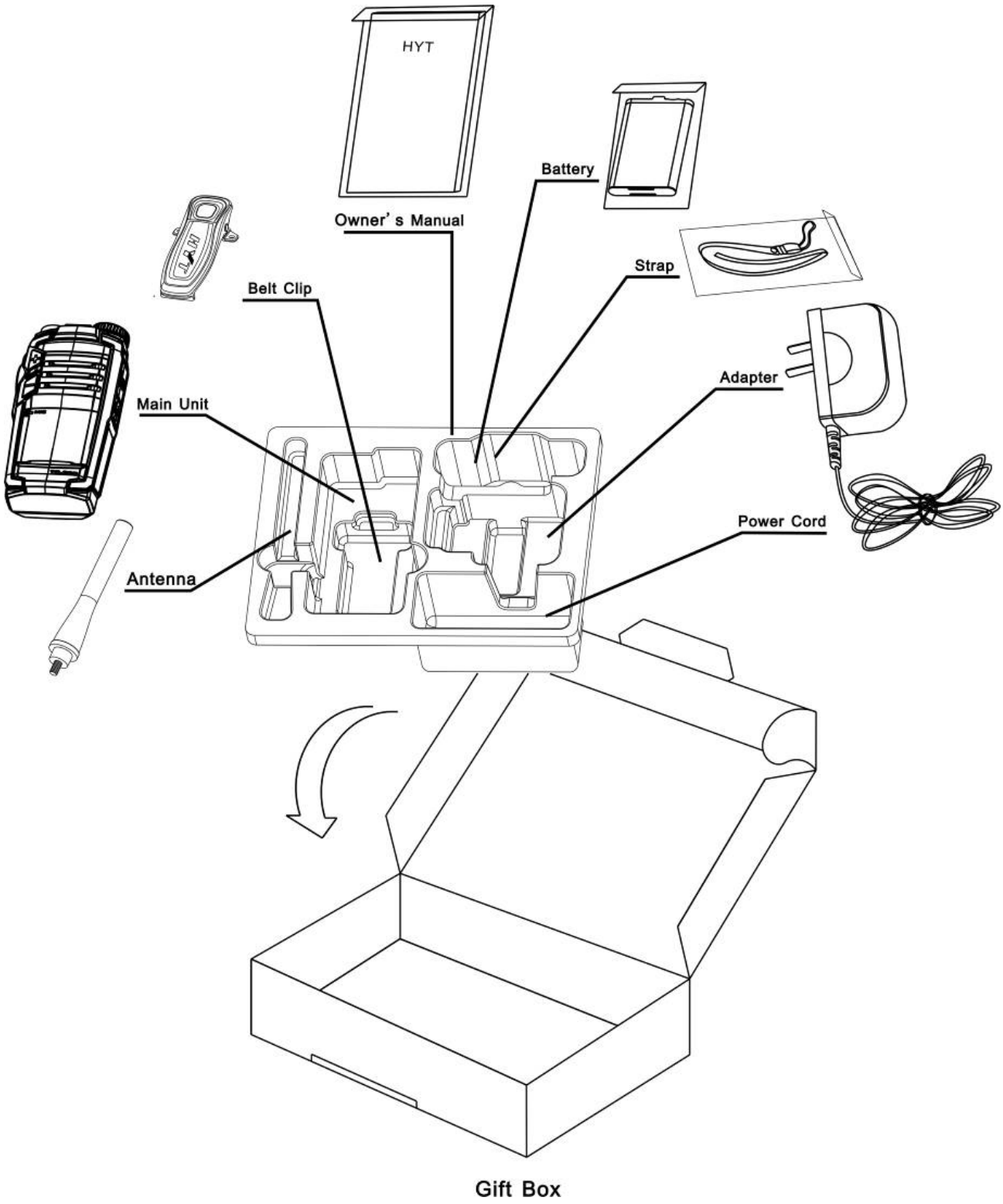
TC-320 Parts List 2

No.	Part No.	Items	Qty. (PCS)
1	6201658001010	Encoder knob cover (RoHS)	1
2	7102006000000	Machine Screw M2.0*6.0mm	1
3	6000718100000	Encoder knob (RoHS)	1
4	7206007400000	Fixing nut of Encoder switch (RoHS)	1
5	6100335000000	O_RING for antenna (RoHS)	1
6	6000737000010	Light guide (charge LED) (RoHS)	1
7	6000736000000	Light guide (signal indicator) (RoHS)	1
8	6100363000000	POWER key (RoHS)	1
9	6201644000000	Felt speaker (steel) (RoHS)	1
10	7400229000000	Felt speaker (cloth) (RoHS)	1
11	7500250000000	Speaker washer (RoHS)	1
12	4210038000000	Cable (RoHS)	2
13	6000739000000	Accessory Jack Cover (RoHS)	1
14	6201643000000	Battery discharging piece (RoHS)	2
15	6000734000010	Radio Chassis (RoHS)	1
16		Li-ion battery pack (RoHS)	1
17	7500249000000	Sponge pad for rear cover (RoHS)	2
18	6201796000000	Belt clip dome (RoHS)	1
19	7000205000000	Spring of Belt clip (RoHS)	1
20	7000206000000	Bolt of belt clip (RoHS)	1
21	7000181000000	Fender washer (RoHS)	1
22	6000836000010	Belt clip (RoHS)	1
23	7102505000200	Machine screw M2.5*4.80mm(RoHS)	2
24	6000733000000	Rear cover (RoHS)	1
25	7000179000000	Spring of battery latch (RoHS)	1
26	6000738000000	Battery Latch (RoHS)	1
27	7102008020100	Self-tapping screw PT2.0*8.0mm (RoHS)	4
28	7600036000000	Shield of main unit (RoHS)	1
29	7400233000000	PCB shield (RoHS)	1
30	7400034000000	Speaker insulation pad (RoHS)	1
31	5001000000090	Speaker (RoHS)	1
32	7101904020200	Self-tapping screw (Version 2.0) ST1.9*4.0mm (RoHS)	1
33	6201671000000	Charging piece (RoHS)	2
34	7209802800000	Supporting ring of encoder switch (RoHS)	1
35	4304030000030	Gray code band switch (RoHS)	1
36	6201653000020	Antenna bracket (RoHS)	1
37	7101704020100	Self-tapping screw ST1.7*4.0mm (RoHS)	2
38	4301040000060	PTT switch (RoHS)	2
39	7600037000000	Conductive sponge (RoHS)	1
40	7600020000000	3M Embossed copper foil (RoHS)	1
41		Main PCB(RoHS)	1

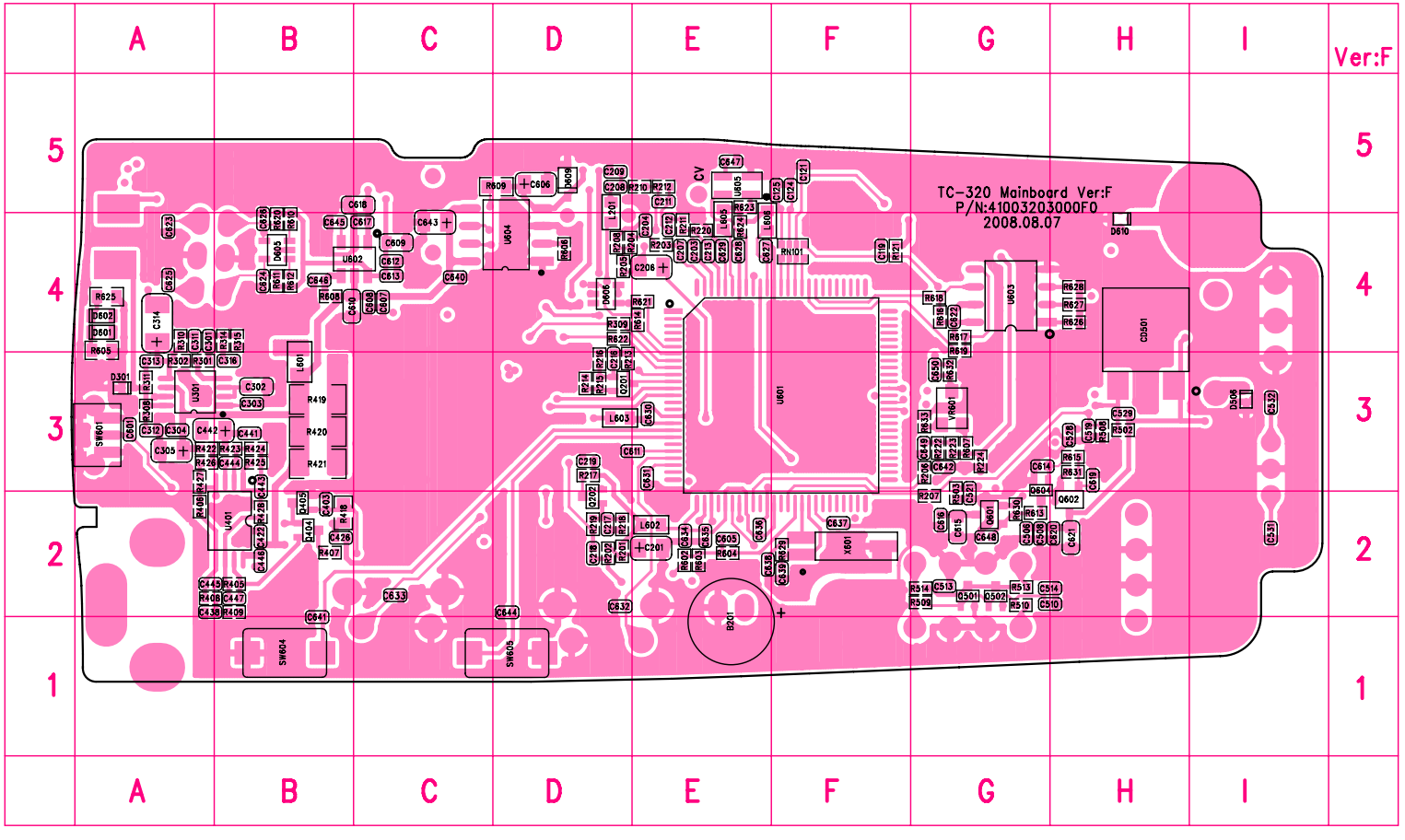
42	5002230000010	MIC (RoHS)	1
43	6100111000010	Silica rubber mic bushing (RoHS)	1
44	7400077000000	Mic net (RoHS)	1
45	6000732001000	Front case (RoHS)	1
46	6300062001010	Decorative sheet (zink alloy) (RoHS)	1
47	6100365000000	PTT key (silica rubber) (RoHS)	1
48	6000735000010	PPT key (RoHS)	1
49		Antenna (RoHS)	1

Note: Parts that are not marked with material number may vary with radio frequency band.

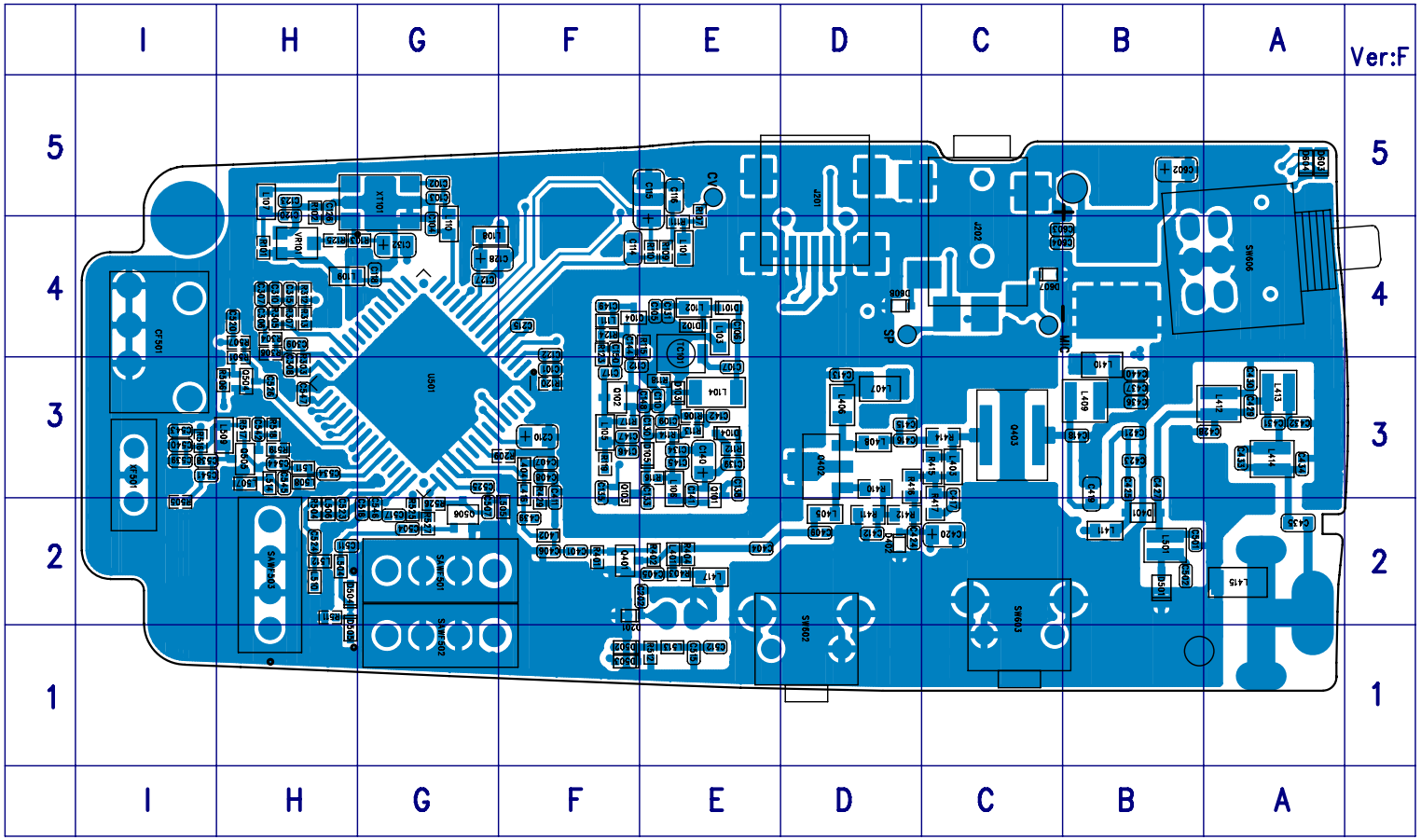
Packing Diagram



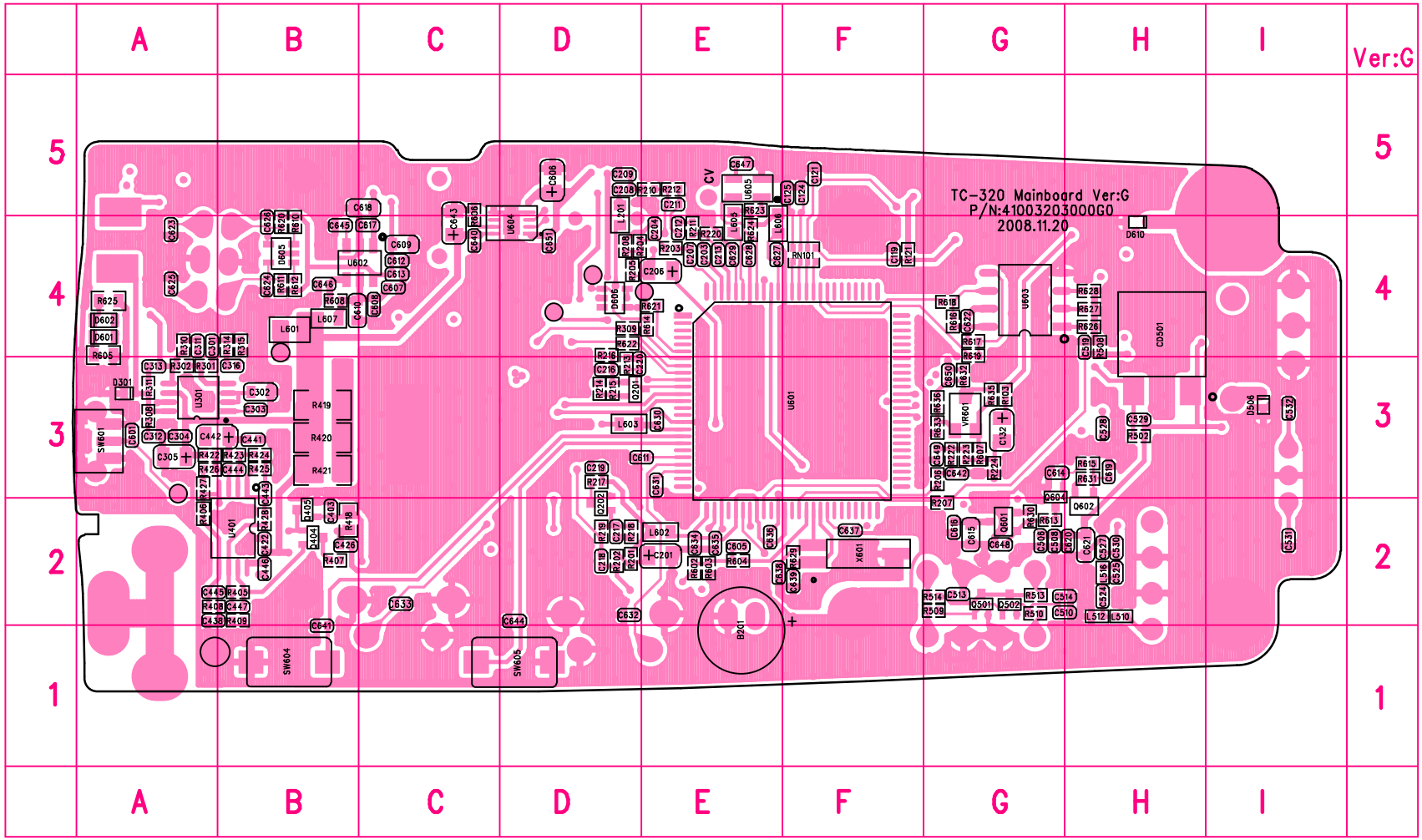
TC-320 VF PCB View
Top Layer



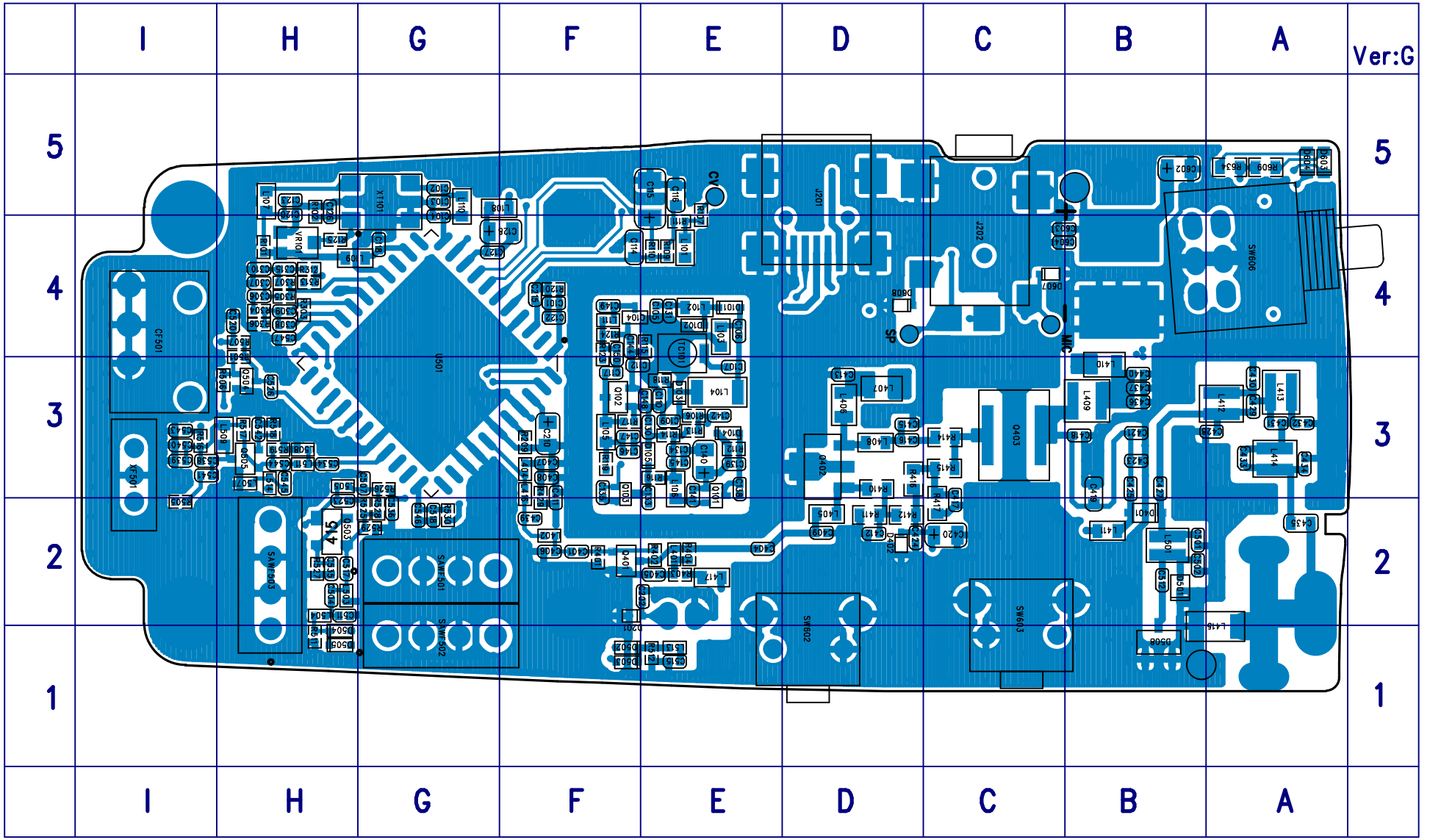
TC-320 VF PCB View
Bottom Layer



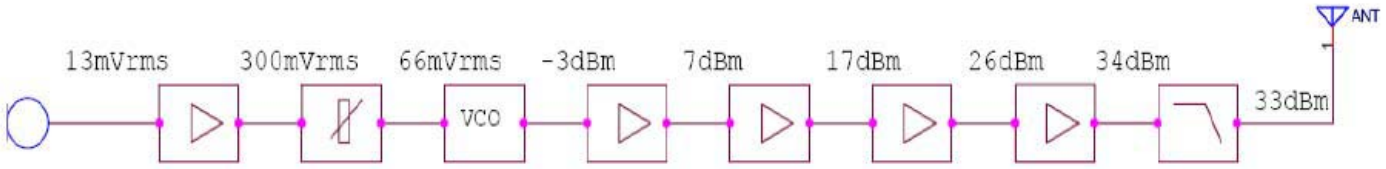
TC-320 VG PCB View
Top Layer



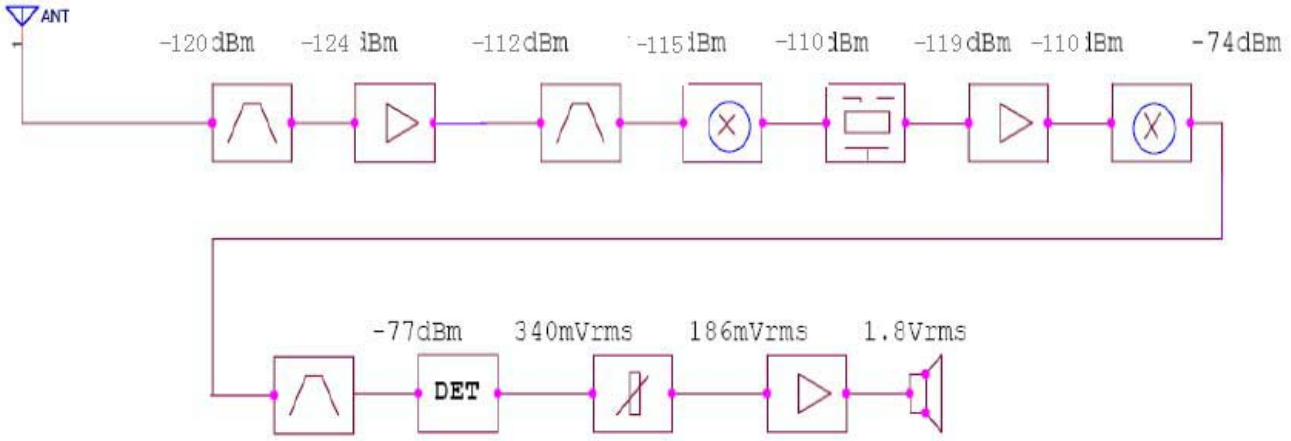
TC-320 VG PCB View
Bottom Layer



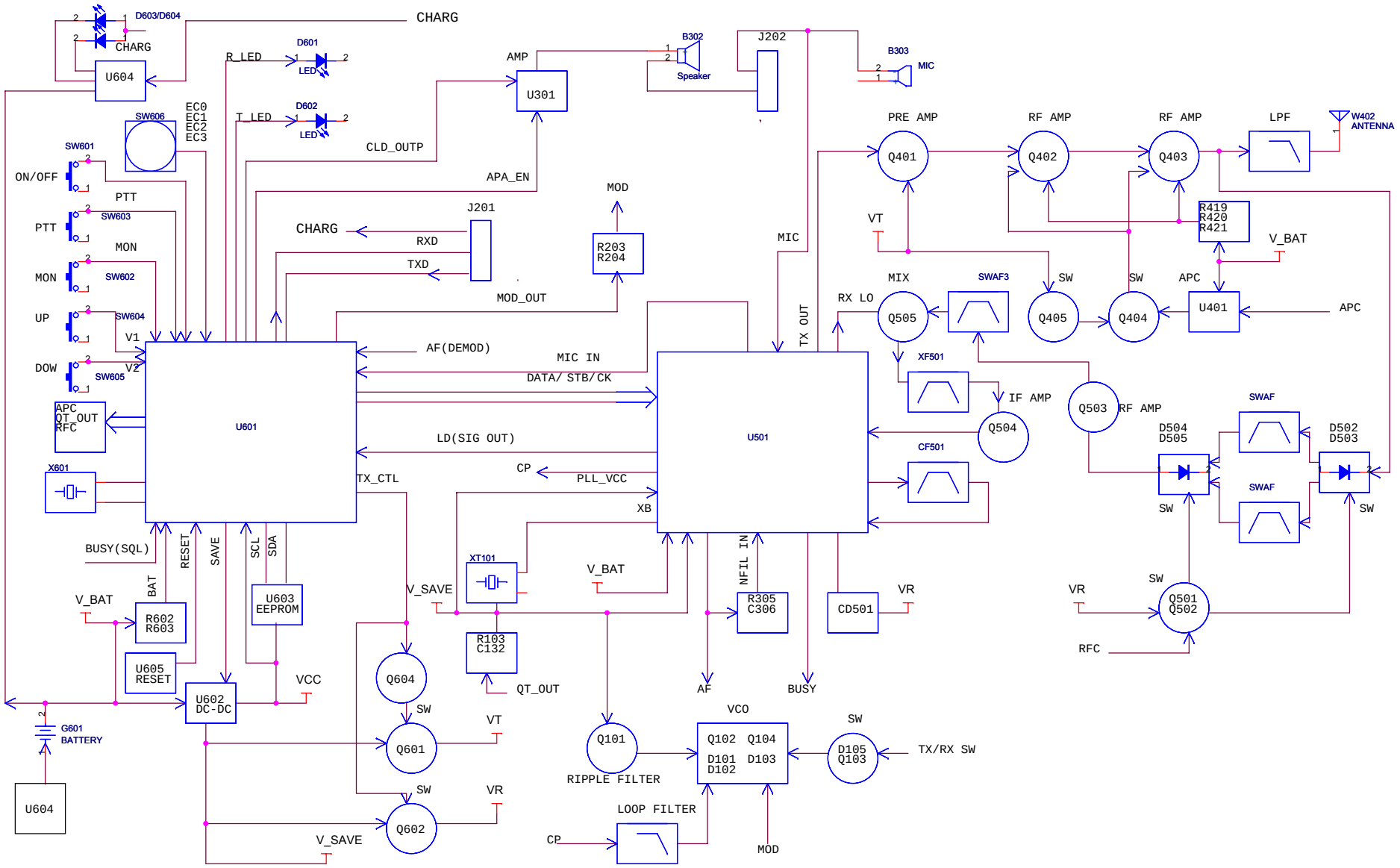
Tx


ANT
13mVrms
300mVrms
66mVrms
-3dBm
7dBm
17dBm
26dBm
34dBm
VCO
33dBm

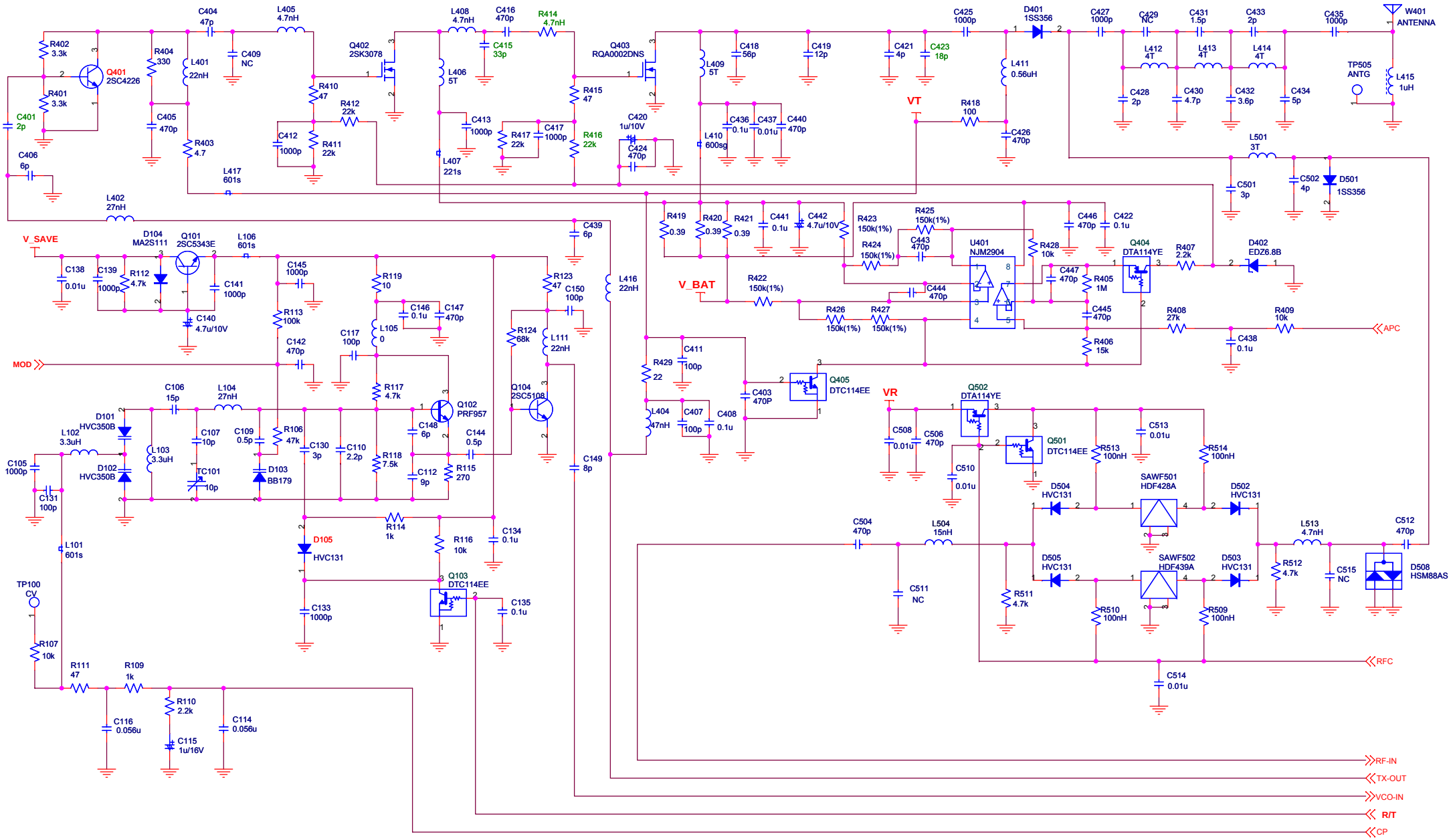
Rx


ANT
-120dBm
-124dBm
-112dBm
-115dBm
-110dBm
-119dBm
-110dBm
-74dBm
-77dBm
340mVrms
186mVrms
1.8Vrms
DET

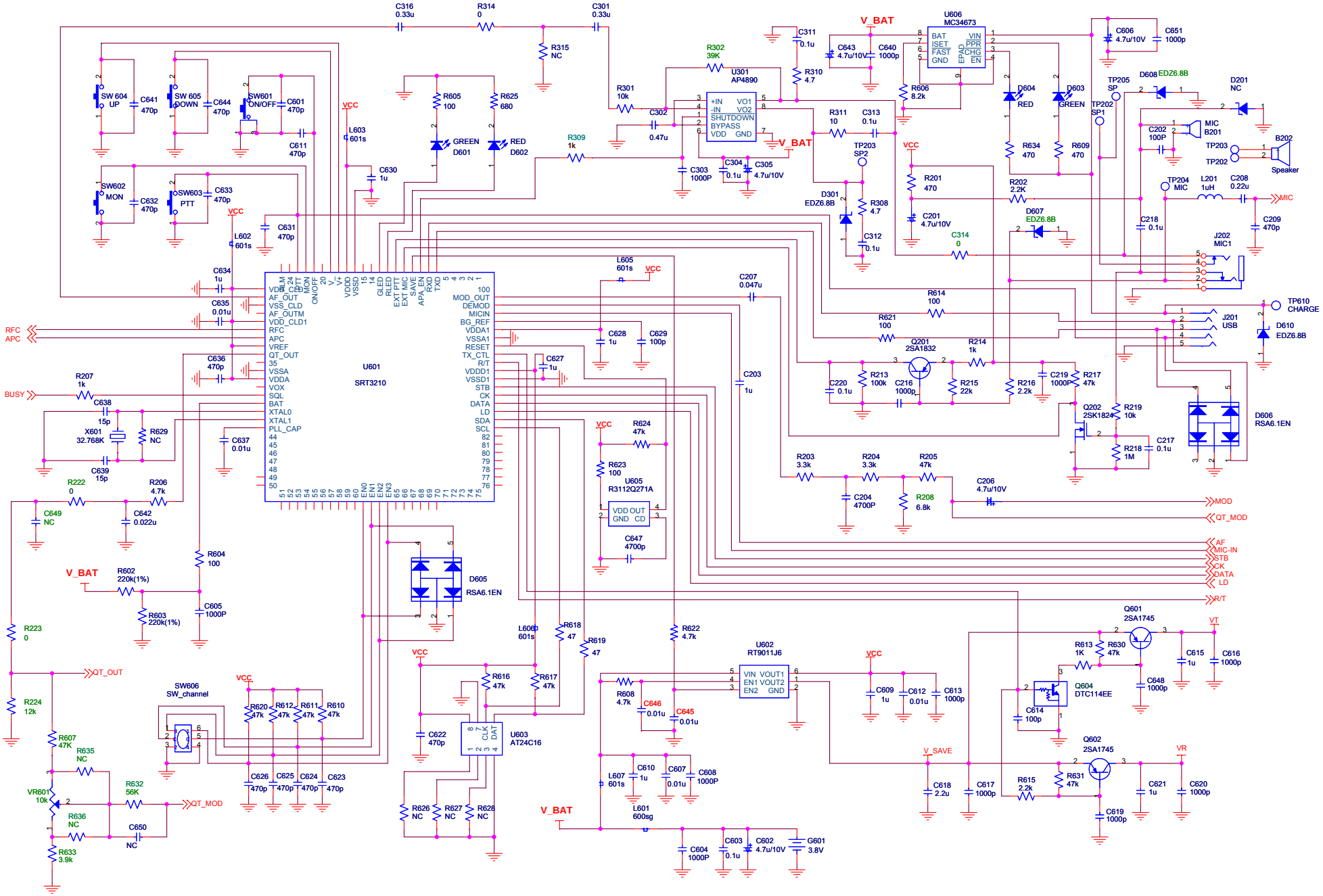
TC-320 Block Diagram



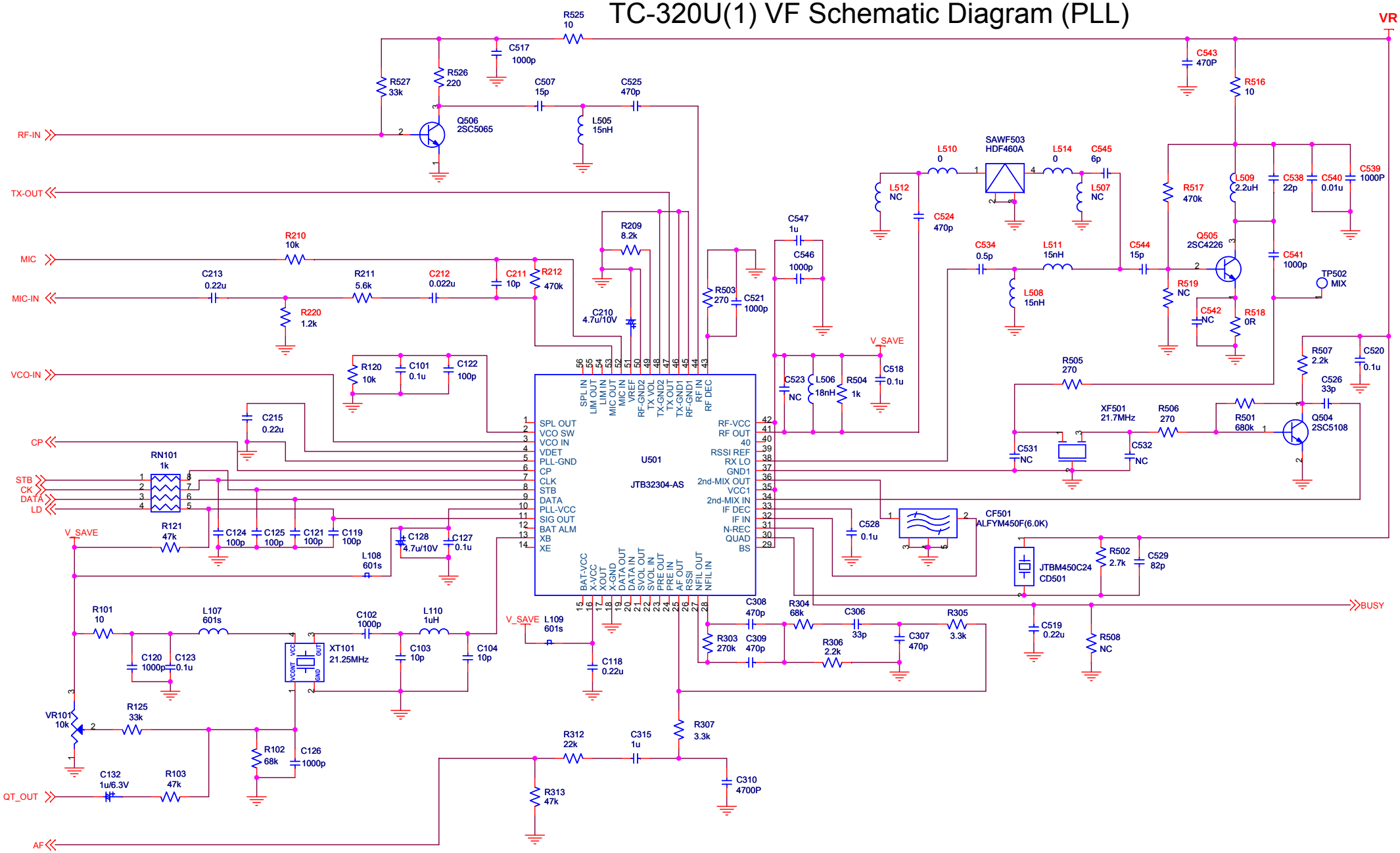
TC-320 Schematic Diagram (RF)



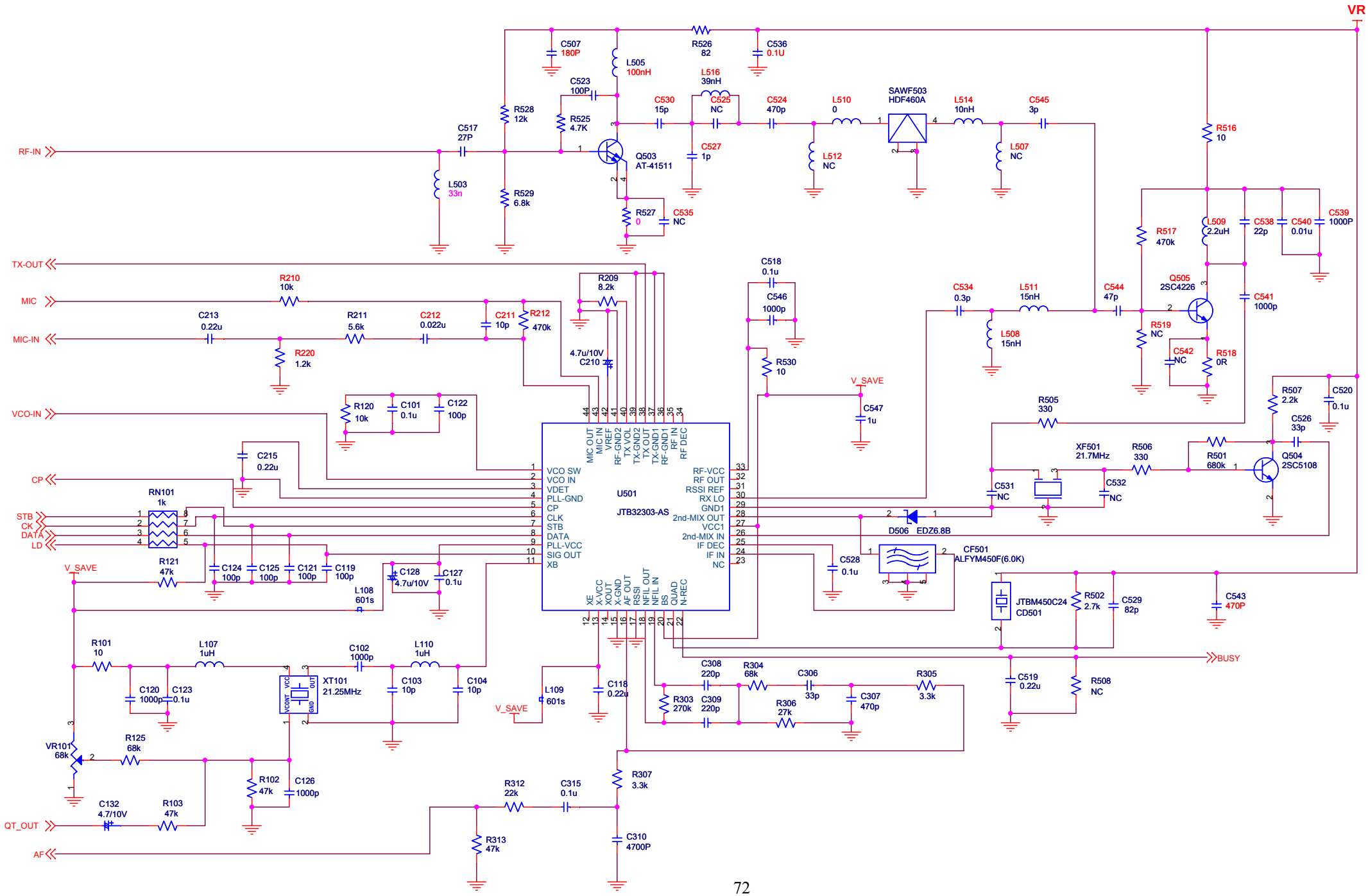
TC-320 Schematic Diagram (CPU)



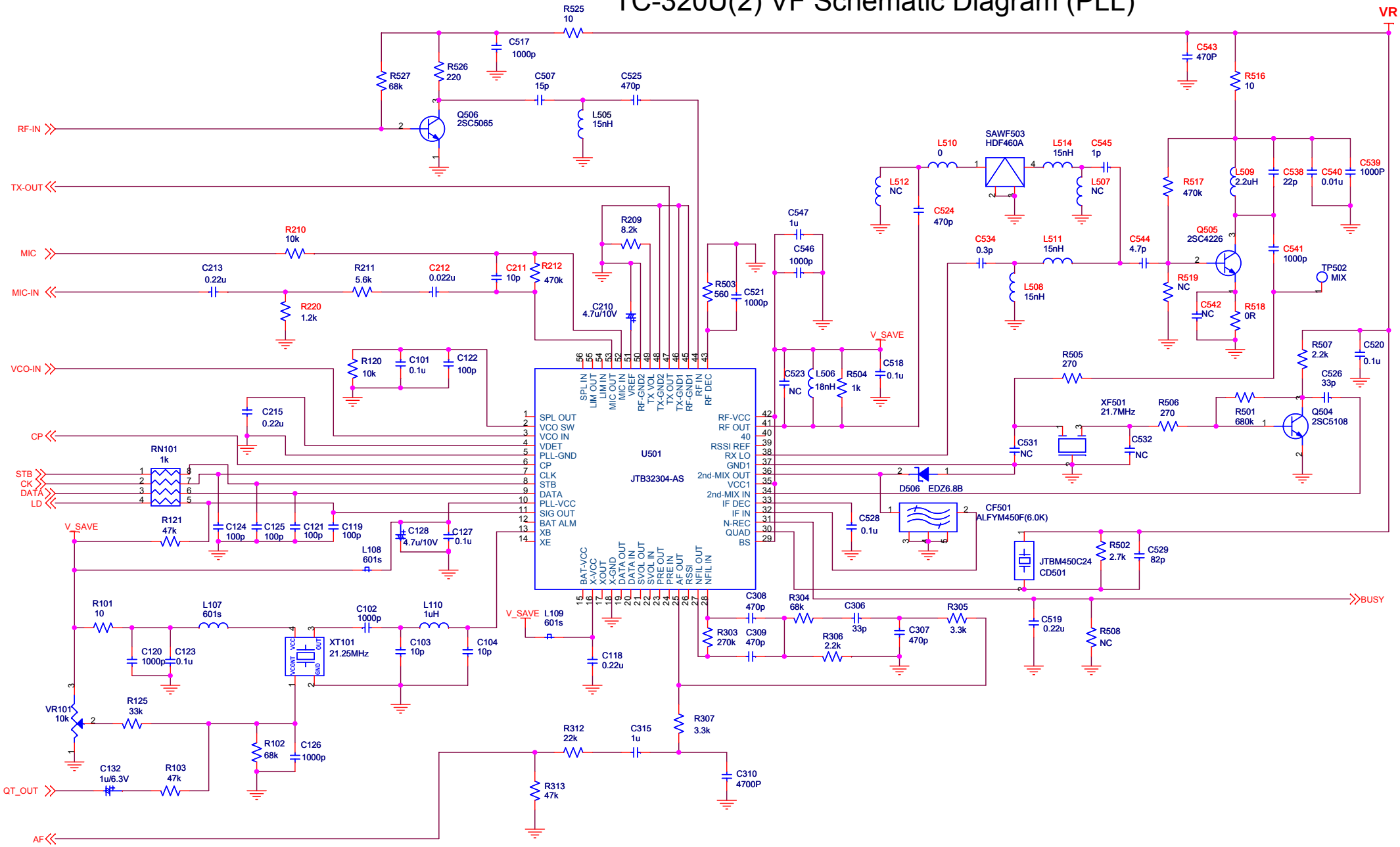
TC-320U(1) VF Schematic Diagram (PLL)



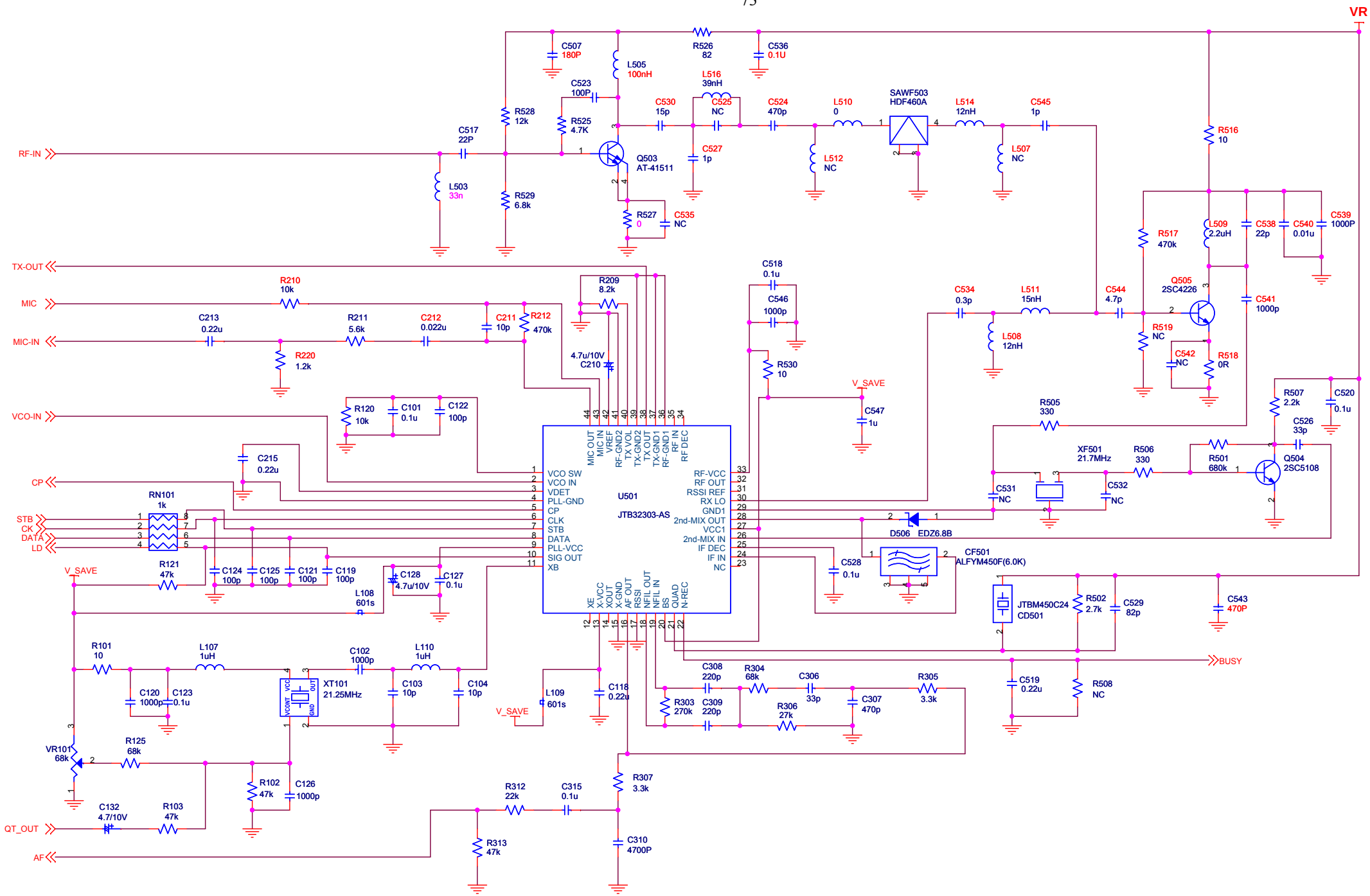
TC-320U(1) VG Schematic Diagram (PLL)



TC-320U(2) VF Schematic Diagram (PLL)



TC-320U(2) VG Schematic Diagram (PLL)



Specifications

General Specifications	
Frequency Range	400-420MHz, 450-470MHz
Channel Capacity	16
Channel Spacing	25 KHz /12.5KHz
Operating Voltage	3.8V DC
Battery	1100mAh Li-Ion battery
Battery Life (5-5-90 duty cycle)	About 8 hours
Operating Temperature	-20℃~+55℃
Dimensions (H×W×D) (with battery, without antenna)	100mm×48mm×27mm
Weight (with antenna & battery)	135g
Frequency Stability	±2.5ppm
Receiver	
Sensitivity	≤0.25/0.28μV
Selectivity	60/55dB
Intermodulation	55dB
Spurious Response Rejection	60dB
Rated Audio Power Output	0.4W (Speaker impedance: 8 ohm)
Rated Audio Distortion	≤5%（0.4W）
Transmitter	
RF Power Output	2W/0.5W
Spurious and Harmonics	≤-27dBm
Modulation Limiting	≤5/2.5KHz
FM Noise	≥38/34dB
Modulation Distortion	≤5%

Note: All Specifications are tested according to TIA/EIA-603, and subject to change without notice due to continuous development.

HYT endeavors to achieve the accuracy and completeness of this manual, but no warranty of accuracy or reliability is given. All the specifications and designs are subject to change without notice due to continuous technology development. Changes which may occur after publication are highlighted by Revision History contained in Service Manual.
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